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Decoding the London Terraced House

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Abstract

This report attempts to look into the typology of the English Terraced House, one of the most famous types of domestic architecture in the UK. The study discusses the evolution of this genre, tracing its genotypical properties and locating alterations in its spatial structure since its initial appearance in the late 17th century. What has really changed and how it is related to social and other factors are fundamental questions addressed in this paper.

The study is focused on the area of London. Its findings are based on the quantitative and statistical analysis of 27 case studies, which represent all the significant stages of the typology's evolution. The fundamental tools used for this process are the Space Syntax theory and analytical methodology.

The paper begins with a brief history of the Terraced House typology in the United Kingdom, presenting its origins, the key factors that had a strong impact on its formation as well as the latest developments. The next part of this study introduces the theoretical concepts used in the analysis and summarizes important previous work conducted in this field. The plans of the case studies are transformed into justified adjacency graphs. Statistical tables of their syntactic properties as well as observations of common space configuration patters uncover basic features of the Terraced House genotype. The analysis is complimented with isovists in order to examine issues related to the perception of the internal domestic space.

Drawing on the above findings, it is argued that one of the dominant characteristics of the Terraced House which remained almost unaffected through the centuries is the dependency of its spatial structure on a central 'spine' of spaces which divides and unites the functions of the dwelling according to the changing needs of the English domestic culture. The report ends with an attempt to trace the limits of the flexibility of the Terraced House in relation to its genotypical characteristics. It is contended that its geometrical properties impose a remarkable canon on its syntactic - and by extension its functional - properties.

***Key words**: London Terraced House, English Domestic Culture, Flexibility, Space Syntax*

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Introduction

"These narrow houses, three or four storeys high [...] and the agility, the ease, the quickness with which the individuals of the family run up and down, and perch on the different storeys, give the idea of a cage with its sticks and birds."

Louis Simond (1817, vol. I, p. 64) - quoted by Summerson (1945)

Until the beginning of the Twentieth Century more than the 85% of all dwellings in England and Wales was covered by Terraced Houses (Muthesius 1982, p. ix). Since then the percentages have changed, however great schemes of Terraced Houses built in the last centuries still accommodate all the spectrum of the British social classes and therefore they should not be considered as a typology that had been developed in the past and 'died'. Terraced houses kept being built in accordance to the traditional architectural style and morphology until the Second World War. After a long pause in their production - from the 1950's until the 1980's - the Terraced House was re-introduced, this time not as the dominant dwelling type but as an equally convenient housing typology. One has only to check the annual R.I.B.A. housing awards[1] to realize that more and more Terraced House schemes are developed in the UK.

There has been a great debate on why these houses still survive despite the various problematic issues bound to their morphology. For example a significant percentage of their space is occupied by halls, corridors and staircases, an arrangement characterized by Hermann Muthesius (1904, p. 143) as a "*deplorable state of affairs*". In addition they are inaccessible to the disabled, they do not offer any space for car parking and - in regards to the old buildings - there are severe problems with high maintenance costs etc. Stefan Muthesius (1982, p. ix) suggests that people do not inhabit these houses only because they cannot afford newer ones but because they still approve them. Thus a fundamental question that is raised here is about any basic - genotypical - properties of the Terraced House that have ensured its 'survival'. It has been argued that the Terraced Houses appear to be exceptionally flexible, being this way able to efficiently accommodate the changing users' needs (Muthesius 1982, p. 5;

Hanson 1998, p. 110).

This report's primary scope is to look into the genotypical properties of the London Terraced House as it was originally developed in the pre Second World War period and how some of these were inherited to the latest dwellings. The basic changes in the spatial structure of the typology will be discussed in relation to the changes in the English domestic culture and the impact of the new trends in architecture on the morphology of the dwellings. This study also examines the potentiality of this typology to adapt itself to the changing family life structure.

Chapter One is a brief presentation of the history of the Terraced House in London. The most important factors that have had a strong impact on the morphology of the Terrace House will be outlined. The next chapter reviews basic previous work conducted on the spatial culture of the British Terraced House as well as theories on the configuration of space which also apply to the domestic environment. The work of Evans (1997) on the basic ways of organizing the house plan (compartmentalised corridor plan versus nexus of interconnected rooms[2]) as well as Lawrence's (1987) study on the factors that influence the arrangement of functions in the interior of the Terraced House are specially presented. Brown and Steadman's work (1987) exploring and verifying the possible variations of the typology based on the geometrical properties of the rooms reveals the need for a systematic analysis based on the concepts of 'building function' and 'user interfaces' as they are presented by the Space Syntax theory (Hanson, Hillier & Peponis 1984; Hillier 1996). The basic Space Syntax methods of quantifying and analysing the configurational properties of space will be presented in the following chapter as well as their application in detecting genotypical similarities amongst houses of the same type and comparing related domestic codes (Hanson 1998).

Chapter Four is a presentation of the criteria based on which the selection of the case studies has been made. Chapter Five constitutes the main body of the report. The statistical analysis of the case studies' syntactic properties coupled with the identification of spatial patterns that appear to emerge in most of the case studies point out the elements of the Terraced House genotype. Separating the sample in pre-WW2 and post-WW2 groups helps us identify what has actually been modified with respect to their spatial structure and what has remained the same. Isovists of the houses' interiors are also used in order to explore physical properties of domestic space. This essay continues with a discussion on the

findings produced by the analysis. How any changes in the spatial configuration of the Terraced Houses are related to social or other factors and what they imply for the English domestic culture are major issues addressed in this part. This chapter ends with an attempt to identify the limits of the flexibility of the Terraced House. The concluding Chapter Six summarizes the report, and suggests how the findings of this research would be enriched or reinforced.

Chapter 1: A brief history of the Terraced House typology in London

a. Tracing the Evolution of The English Terraced House

Although since its initial appearance and for more than two hundred years the Terraced House had been the dominant dwelling type throughout Great Britain, tracing and exhaustively presenting its evolution is a rather complicated task. The bibliography regarding this topic is relatively poor because Terraced Houses started attracting academic notice only in the beginning of the Twentieth Century. As Muthesius (1982, p. ix) underlines, this category of buildings was not even described as 'architecture'. Thus, the only bibliographic sources on this subject are some contradicting guides for builders and model houses as well as any general guidelines provided by the several Building Acts.

Another factor that makes the research on the history of Terraced Houses even more problematic is that this specific typology has not dramatically changed through the centuries. Apart from some significant cases, the vast majority of Terraced House estates was developed by building contractors who just applied the same model plans in hundreds of sites throughout the country whereas professional architects were hardly involved in this process. Variations can be mainly located in the arrangement of the internal spaces, or in the size and function of secondary rooms but we cannot securely discuss about massive changes towards one direction or another.

It is a fact that London has always been playing the leading role as far as the trends in architecture are concerned. However there had been developed various local variations of Terraced Houses in cities throughout Great Britain. Some of these types were successful and thus broadly accepted while others were soon abandoned. This fact aggravates the problems in the research on the history and the evolution of the typology; sometimes it is hard to clearly define which type was developed first and how it is related to the rest. This chapter attempts to present a brief presentation of the history of London Terraced Houses pointing out just the key factors which had a very strong impact on their morphology and architectural style.

b. The Evolution of the 'traditional' Terraced House

The history of the Terraced House is strongly connected to the developments in architecture in the early 17th century England. A key personality of this period was the architect Inigo Jones, Surveyor General to the King and a great admirer of the Italian style. In 1625, Jones had the opportunity to apply his Italian style-based ideas throughout the whole city. He was appointed executive officer of the Commission of buildings, the mission of which was to set a series of regulations and make sure they were followed. The most important of their actions was the imposition of the Italian Canon, a rule that had a tremendous impact on the architecture of the city, providing a discipline for London streets which was accepted for more than two hundred years. The first housing scheme built merely according to the aforementioned morphology was the Piazza of Covent Garden, developed by the 4th Earl of Bedford in 1630 (fig. 1). Another significant development of this period was the Great Queen Street which is considered to be the first regular street in London (fig. 2). However, the starting point of mass production of row houses was in 1661 when Lord Southampton was allowed to grant building leases in his land in Bloomsbury. This is the official beginning of the speculative building that brought London into being and which still operates at the present day.

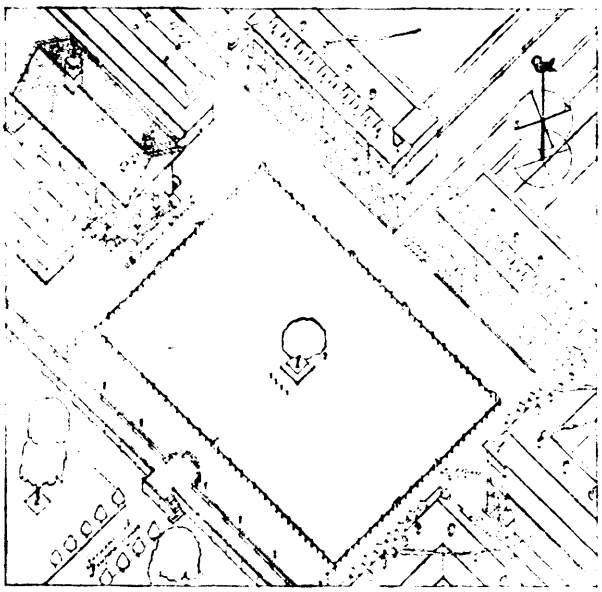


Fig. 1 (Summerson 1945, p. 16)

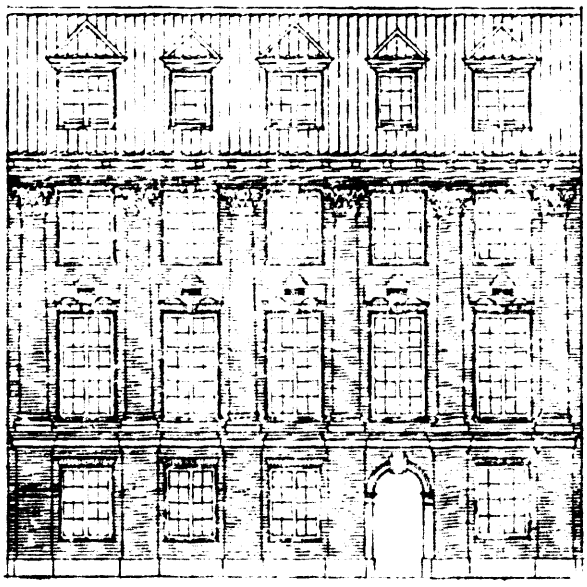


Fig. 2 (Summerson 1945, p. 18)

After the Great Fire of London in 1666, which destroyed the greatest part of the city, the need for setting some regulations on the construction of buildings emerged. The first London Building Act came into effect one year later, in 1667, mainly intending to impose fire-proof building methods. However, for the first time in English history, the standardization of the dwelling types appears. The houses were divided in four classes depending on their size and therefore their cost. The first Building Act did not introduce any revolutionary ideas in design. Muthesius (1982, pp. 31-37) supports that the Act just crystallised the best practice of the time. Member of the Parliament Nicholas Barbon built hundreds of housing estates around London, following the new methods. He is considered to be the one who really established the typology of the deep and narrow fronted residential building (Woodforde 1978, pp. 40-48). After that there was an 'explosion' in the production of row houses and the new type rapidly spread throughout the United Kingdom.

These new dwellings started being called Terraced Houses - a term rather unidiomatic according to Summerson. It is generally believed that the term was borrowed from garden terraces by English architects of the late Georgian period to describe streets of houses whose uniform fronts and uniform height created an ensemble that was more stylish than a "row"[3]. Initially the typology of Terraced Houses was really simple. Regardless of the class or the number of storeys, the plan of each floor was always the same: a corridor and a staircase on one side and two rooms on the other - one at the back (facing a yard hidden from the street) and one at the front (fig. 3). The houses usually had a basement while there was also a one-storey extension of the house at the back yard which was used as a water closet or a storage room.

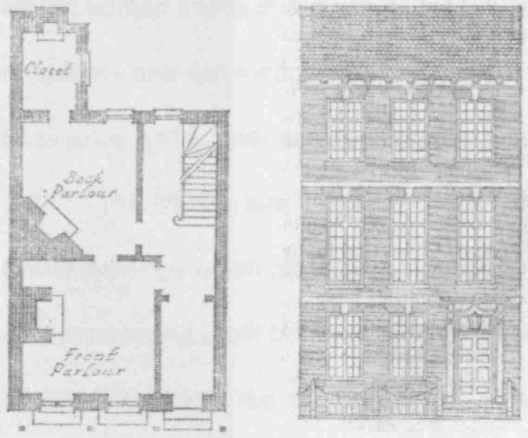


fig. 3: Plan and front elevation of a typical Terraced House (late 17th century) (Summerson 1945, p. 31,34)

Many Amendment Acts followed the original one until the publication of the Great London Building Act in 1774. This Act was later christened as 'The Black Act of 1774' because almost all of the decorative elements on the facades of houses were banished, setting the basis for the so-called monotony of the streets of London. After the Great London Building Act the back-yard extension grows bigger, giving shelter to more kinds of functions. At the end it grew so large that it could also contain a bedroom or a kitchen, gradually substituting for the basement. The typology has not really evolved after that. The next important Building Act was the one of 1894 but it was more about safety issues and topics related to property and the leasehold system. The Building Acts did not include plans of prototype houses but mainly some general guidelines on the volume of the house. Many authors (Nicholson 1823, Simon 1875, Fletcher 1871 &1901 etc) published some guides for builders that included model plans and clear directions on how to design the 'proper' Terraced House. Those guides were devoutly followed by the speculative builders. However one can locate some special cases of Terraced House schemes around London. For example there are types of very small Terraced Houses built mainly in North London in order to give shelter to the lowest working classes.

c. Terraced Houses after the Second World War

The end of the Second World War indicated the beginning of a new era in architecture. The influence of the Modern Movement was strong and soon the old type of the Terraced House was abandoned. Large areas of Terraced House schemes were demolished in order to make room for the modernistic gigantic housing estates. The traditional row house was replaced by new types which promised to shelter the human needs in a much better way than the played-out row house. But - at least in the United Kingdom - one can surprisingly notice that despite the modernistic manifestoes, too many housing estates were grafted with design principles previously found in Terraced Houses.

The 1980's saw a revival of the Terraced House. Architects started proposing the Terraced House typology as an alternative solution to the housing problem. This time the driving force was not only maximizing profit but aesthetics and the upgrading of the quality of life. However there is a noteworthy difference to the 'traditional', pre-war dwelling: there is no universal standardization in the design of those dwellings. Each designer proposes a new type of Terraced House and since the 1980's there

have been hardly any 'prototypes' but several hard-to-classify versions of row houses. Nevertheless in 2005 architect Pierre d'Avoine presented the plans of his 'Slim House' and 'Slim House 2', two housing types based on the Terraced House typology. His slogan was that these low-cost houses can be easily adapted in every urban environment in the United Kingdom (d'Avoine, 2005, pp. 70-89). This could be considered as an impressive comeback of the Terraced House.

Chapter 2: Ideas to work with

"Certainly it would be foolish to suggest that there is anything in a plan that could compel people to behave in a specific way towards one another, enforcing a day-to-day regime of gregarious sensuality. It would be still more foolish, however, to suggest that a plan could not prevent people from behaving in a particular way, or at least hinder them from doing so."

Robin Evans (1997, p. 89)

The vast majority of the bibliography regarding the British Terraced house comprises of descriptive, historical reviews of its architectural style. Furthermore, the greatest number of ethnographical approaches limit their study on the 'best' rooms of the houses since access to the private domain of the house is usually not welcome (Hanson 1998, pp. 119-120). However there is a number of studies which, based on the hypothesis that cultural factors are the dominant generative forces for the form or the configuration of domestic space (Rapoport 1969; Glassie 1975; Hillier & Hanson 1984; Lawrence 1987; Evans 1997; Hanson 1998, Cieraad 1999), look into the function of the dwellings and its social implications. This chapter sets out to outline some of those studies and to present the basic ideas and theoretical tools on which the following analysis on the domestic space of the Terraced House will be based.

According to Evans (1997) the traditional British town house is a complex of rooms the arrangement of which is based on the function of transition spaces (the 'thoroughfares'). In contradiction to the Renaissance palaces which are composed by series of interconnected rooms, the function of movement within the British house moved out of the rooms, in corridors, staircases and halls, dividing the domestic space in two domains: the inhabited 'closets' and the unoccupied circulation space. By organizing the functions in terminal rooms, this arrangement offered independency and hid the servants from the guests. The thoroughfares have become the 'spine' of the British house because "*they differentiated functions by joining them via a separate distributor*" (p. 78). Evans supports that circulation space brings the rooms of the house closer to each other since they are all directly connected to the central network of transition spaces and goes on to point out a paradox: in facilitating communication, the corridor re-

duces contact. Canalization of movement almost prohibited incidental interactions as 'distracting' and - even worse - 'malignant' and reinforced only the purposeful and necessary communication. This was proclaimed as the "*proper house plan*" for gentlemen (Kerr 1864) and it reflects the strong hierarchical system that used to characterize the British house. On one extreme the servants were hidden from the public rooms and on the other extreme Sunday visitors would enjoy the front parlour without being disturbed by the 'terrifying'[4] backstage domestic life.

The concept of privacy at home and the relation between the private and the public domain are issues strongly related to the British domestic culture. Lawrence (1987) conducts a comparative study on the spatial structure of British and Australian houses (pp. 77-112) with respect to the above. He presents four space classification codes as the key elements that organise the spatial structure of the traditional Terraced House. The rooms are divided in 'clean'/'dirty', front/back, private/public, day/night. The first three notions are epitomized in figure 4.

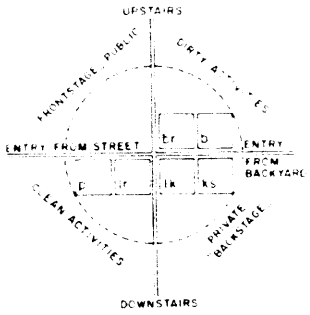


Figure 4: Classification of the British Terraced House spaces according to Lawrence (1987, p. 107).

The 'clean', public rooms (like the parlour) are located at the front of the ground floor presenting the house to the public whereas the kitchen is at the back and the bedrooms are hidden in the upper floors. The author, based on ethnographic data, also underlines the social importance of the parlour as a space reserved for special occasions and the exhibition of ancestral furniture and heirlooms (p. 90) despite the associative problem of space under-utilisation. Nevertheless it has to be mentioned that Lawrence's work is mainly focused on the position of the rooms in the dwelling, depending solely on their function, and therefore presents a rather static analysis of domestic space. What he maps on his diagram is the position of functions on the land rather than their relative position to each other. The linking function of movement and distribution within the house is almost disregarded.

A thorough study of the Terraced House spatial structure was conducted by Hanson (1998, pp. 109-133), a significant part of which is based on the theoretical notions of Space Syntax which are going to be analyzed in a later paragraph. However, comparing the traditional working-class Terraced House to the Terraced House that has been converted in order to accommodate the needs of the new middle classes, Hanson's study introduces three new pairs of classification codes which take into account the qualitative properties of domestic space in relation to observed English cultural behaviours (pp. 123-128). These are Visibility / Permeability (referring to the extent to which the interior of the house is visible and/or accessible from the outside respectively), Insulation / Sequencing (referring to whether spaces are interconnected to each other or separated and reconnected via circulation spaces) and Categoric Differentiation / Relative Position (tracing the extend to which "*particular functions are assigned unambiguously to specific spaces*" (p. 127) and defining whether there are any standard orientation rules that influence the arrangement of functions in the dwelling). The representation of those variables in diagrammatic tables can be found in figure 5.

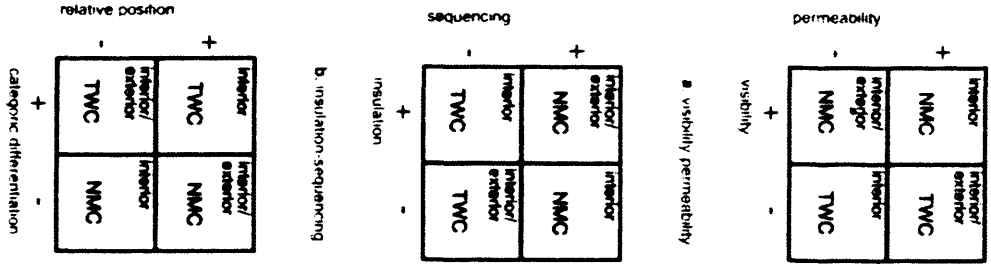


Figure 5: Classification of the British Terraced House according to its spatial configuration (Hanson 1998, p. 124).

(TWC= Traditional Working Class, NMC= New Middle Class)

It should be underlined that Hanson's study does not examine the layout of the house only as a product of movement and distribution qualities (like Evans) or the social character of functions (like Lawrence) but as an organism influenced by a set of interdependent variables that take the relation of the dwelling to the public domain as well as the internal social dynamics of the family into account. Complimenting the work with a quantitative study of the two 'domestic codes' based on the Space Syntax analytical tool of the justified graph, Hanson organizes the findings of the research by using two strong classification codes, originally introduced by Bernstein (1975). The traditional Terraced House represents a form of 'collection' code where spaces are collected together, each participant retaining its strong identity, whereas the converted Terraced Houses belong in an 'integration' code where spaces

are related to each other, all aligned to support a dominant spatial concept - which in this case is 'style'. Hanson argues that authority and its power within society may be expressed in accordance to the aforementioned organizational systems. 'Collection' codes are related to 'positional power' where authority is based on its social role and on a strong hierarchical system while 'integration' codes relate to forms of 'personal power' where the social actors' position derives from their individual competencies (p. 131).

Working on a completely different basis, Brown and Steadman (1987, pp. 407-438) have published an analysis on the spatial layout of three common British house types (including the Terraced House) attempting to present how a systematic investigation of their morphology would "*clarify the historical and social influences that impinge on housing design*" (p. 407). Using the DIS computer programme and setting series of geometrical constraints for the house rooms, they begin to generate tables with all the possible variations of the above dwelling types (figure 6).

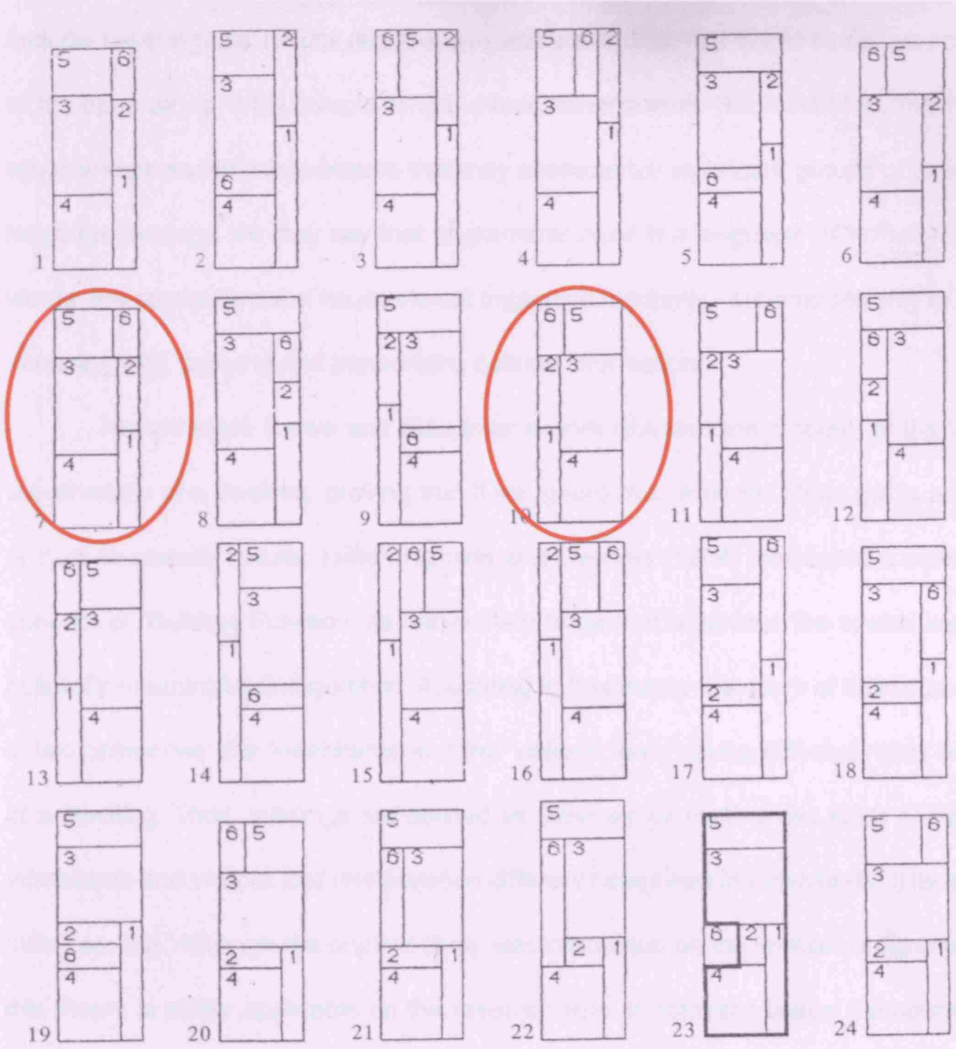


Figure 6: Brown and Steadman's table on the possible variations of the Terraced House - Two identical types are encircled

The next step is to browse in a rich sample of houses of Cambridge as well as in the bibliography and see which of the types presented in the tables have indeed been built. The authors interpret the findings suggesting reasons for why some variations of the houses do not exist while others used to be quite common. In regards to the Terraced House the reasons vary from economic to social.

Brown and Steadman offer an interesting catalogue of possible spatial layouts of British Houses. In their concluding chapter they claim that their methodology could evolve towards the creation of a 'design grammar' (p. 436) and a powerful tool for analysing archaeological data. However their study as presented in their paper is problematic in efficiently capturing the social function of the houses. It is a fact that their tables include both the possible spatial layouts and their geometrically symmetrical ones (e.g. in figure 6, layout 7 is identical to layout 10) as different variations of the dwellings, despite the fact that those are absolutely identical in regards to the social information they carry. The tables also include 'meaningless' results (like the one with a staircase in a single storey part of the building leading to the open air) (p. 416) complicating the researcher's work. But most of all, this method fails to locate any common social denominators that may characterize significant groups of case studies. To use the language analogy, we may say that *"a grammar must fit a language"* (Chomsky 1957, p. 13). In other words, the spatial layout of houses is not organized randomly - subordinate only to the laws of form - but 'meaningfully', carrying and transmitting cultural information.

Nevertheless Brown and Steadman's work revealed the problem of the 'meaning' of the spatial structure of a dwelling, proving that if we ignore this, what we might get is a set of either illegible, or hard-to-classify results. Hillier, Hanson and Peponis (1984) introduced a new interpretation of the concept of 'Building Function' as the primary force that organizes the spatial layout of buildings in a culturally meaningful configuration. According to this theory the users of buildings are generally divided in two categories: the 'inhabitants' and the 'visitors', both having different rights on the various spaces of a dwelling. Thus, buildings are defined as "*devices for making two kinds of interface: one between inhabitants and visitors and one between different categories of inhabitants*" (Hanson, Hillier & Peponis 1984, pp. 66). Although the original study was conducted on the spatial configuration of health centres, this theory is totally applicable on the research field of domestic space. Paraphrasing the original text (Hanson, Hillier & Peponis 1984, pp. 67) we could say that 'the purpose of a house is a) to preserve the

status and solidarity of its inhabitants and b) to control the movement of visitors'. Deciphering the kinds of interfaces that take place within a house may reveal invaluable information about the social structure of the family as well as the relation of the private to the public space.

According to Hillier (1996, pp. 240-268) the definition of the 'programme of the building' derives from the above principles. He clarifies that "*the programme of a building is not the organization that it houses [...] 'Programme' is the name we give to the spatial dimensions of an organization and the key element in any programme is the interfaces that the building exists to conduct*" (Hillier 1996, pp. 250-251) and distinguishes the strong-programme buildings from the weak-programme ones. Generally speaking, the spatial configuration of the former is as such as to prevent incidental interfaces from occurring by organizing the interfaces in a strong hierarchy while the latter generates free movement and unpredictable interfaces. This also applies in full to the domestic space. For example, the previously classified as a compartmetalized-corridor-plan, collection-code traditional Terraced House belongs to the first category whereas the integration-code, converted Terraced House is a rather weak-programme building. Those ideas compose a powerful tool for analysing the interrelated fields of domestic space and culture.

Chapter 3: Basic Space Syntax ideas and analytical tools

Some definitions of the basic Space Syntax ideas and techniques should be presented before proceeding with the analysis of the London Terraced House[5]. Space Syntax is a set of techniques for describing and analysing spatial configurations of all kinds, in particular those found in buildings and in urban space. Most of the Space Syntax ideas are centred around the idea of a graph. A graph is a way of drawing any set of relations between elements, therefore any building can be represented by a graph. The nodes are its spaces and the links between them represent the thresholds that connect those spaces. Graphs may include rings (cyclical arrangements of nodes), otherwise they are metaphorically called "*trees*". By applying mathematical formulas on the graphs that represent spatial organizations we get a series of measures for each one of the nodes. The following is a non-mathematical explanation of some of those measures: The **Depth** between two spaces is defined as the least number of syntactic steps in a graph that are needed to reach one from the other; the **Mean Depth** of a space expresses how far away on average all the other spaces in the configuration are; the **Integration** of a space expresses the degree to which it is integrated or segregated within a configuration: the more a space is integrated, the more it pulls all the other spaces in the complex close to it; the **Control** value expresses how much better or worse connected a space is than its neighbours. It is also considered to indicate the degree to which a space controls the access to its neighbours.

A space can also be classified according to its topological properties. Hillier (1996, pp. 318-320) introduces four space types, called A-B-C-D spaces. 'A' spaces are terminal spaces, that is dead ends, linked to the graph via a unique entrance. Spaces as such only accommodate movement to and from themselves and are characterized by static occupation (Hanson 1998, p. 173); 'B' spaces are thorougfares where movement is highly directed, leading to terminal spaces (or groups of spaces) (Hanson 1998, p. 173); Finally 'C' spaces are spaces that lie on a single ring whereas 'D' spaces are linking junctions for two or more rings. Movement through the latter category "*generates choice as to where to go within sub-complexes of spaces within the overall configuration*" (Hanson 1998, pp. 173-174).

A demonstration on how those notions and tools can be used in order to uncover genotypical properties of dwellings can be found in Hanson's "*Ideas are in things*" (Hanson 1998, pp. 80-108). The authors, study a sample of seventeen vernacular houses from Normandy the plans of which initially seem to be very different from each other. However, reducing the plans to graphs and sorting spaces by their integration value order reveals invaluable information about their spatial structure. After the analysis the houses appear to form two distinctive types, one organized around the 'salle commune' (a kind of living room) and the other around the entrance hall. In the interpretation of the results that follows, these genotypes provide the material based on which a discussion on the houses' domestic culture in regards to the theory of interfaces is conducted. An analysis of the integration / segregation patterns in domestic space can also be found in the aforementioned Hanson's comparison between the old Terraced House and the converted one (1998, pp. 128-130). The study reveals paradoxical issues with respect to the spatial structure of the dwellings (e.g. some unchanged integration patters despite the revolutionary changes in its form) and sets out to explain how these are related to the constants and the variables of the English domestic culture.

Chapter 4: The Case Studies

a. Setting the Criteria for the Selection of the Case Studies

As it was mentioned in the first chapter, the variations of the Terraced Houses throughout the United Kingdom followed different stages in their evolution process. Therefore the first problem that is encountered is about clearly setting the limits of this study. In other words it is essential to set the criteria based on which the selection of the case studies will be made.

This study is focused on Terraced Houses which are located in London, as London - holding the reins of evolution in British architecture - provides a rich field of cases. The case studies should also be purely residential buildings, since houses over stores or artisan workshops produced different typologies. Isolated cases that follow the morphology of the Terraced House but are not parts of a homogenous scheme are not included in the analysis. The main aim of this study is to look into the most common and comparable types of Terraced Houses which are normally occupied by the middle and the lower classes. Thus the size of the case studies ranges between 60 and 150 square metres approximately.

Our sample should fully represent all the historical periods from the late 17th century and on. It would not be so arbitrary to divide this interval into two sub-periods, the first one commencing in 1667 (after the imposition of the First London Building Act) and ending just before the Second World War and the second one starting after WW2 (when the modern movement was universally leading the developments in architecture) and lasting until the present time. The former is the period during which the 'traditional' standardized Terraced Houses with the renowned brick façades were built whereas the latter period is characterized by innovation in design and 're-inventions' of the typology. The above could be summarized in the following table:

Criteria:

Location:	London, UK
Size:	60 - 150 square metres
Date:	Representative Cases for the Periods:
	1670's - 1940 and 1940 - 2005
Other:	100% Residential Buildings
	Row Houses
	Published Cases

Selecting individual cases amongst the thousands of Terraced Houses built in the pre-WW2 period would be an undertaking which is vulnerable to criticism. It has to be remembered that the London Terraced House schemes used to be massively developed by speculative builders who just applied prototype plans. Therefore this period would be sufficiently represented if we just focused our study on the House Classes presented in the Acts. As there were no plans published in the London Building Acts, one has to combine the original texts of the Acts, the design guides of that time and the plans of numerous built examples in order to re-compose the prototypes. An attempt to - almost diagrammatically - redraw the prototype plans can be found in the appendix of this report. It has to be stressed here that these plans may not be accurate in their dimensions but they manage to present the arrangement of spaces and their topological properties. This is the why the isovists presented in the following chapter are drawn on built examples and not on the prototype diagrammatic plans presented herein. Only the classes IV, III and II will be analyzed here since class I goes beyond our standards mainly due to its great size. In regards to the period of the 'traditional' Terraces, five more distinctive types will be included in this study as they also used to be common types at that time. Eleven prototypes in total comprise the sample for the pre-WW2 period.

During the second period the production of houses has shifted from the repetition of prototypes to the 'innovative' proposals by individuals. Therefore a satisfactory sample of case studies would include a number of significant schemes that can be used to stand for the new ideas in architecture from the 1950's until 2005. The International Housing Prototypes database, the R.I.B.A. Annual Housing Awards and some publications on similar themes can provide us with an interesting pool of examples. Sixteen cases in total have been picked up as a representative sample for the post-WW2 period. Plans and photographs of all the case studies are presented in the Appendix.

b. Presentation of the Pre-WW2 Sample

The types of Terraced Houses that were developed in accordance to the Building Acts of 1667 and 1774 (cases 1-6) followed a rather simple spatial layout. Class IV had two floors, while classes III and II had three and four floors respectively (including the basement). Each floor was divided in two main zones. On one side there was the circulation space while on the other there were two main rooms

directly connected to the corridor. In regards to the ground floor, one of the main rooms faced the road and served as the parlour while the other had access to the back yard of the house. This back room used to be the kitchen and the main living room for Class IV while for Classes III and II it served as a second living room. In Classes III and II, the kitchen used to be in the basement along with a secondary utility room. The basement had an independent entrance from the road via a yard below the street level. The bedrooms were located on the first and the second floor being organized according to the front / back layout. The back projection of the Terraced House was initially one-storeyed and accommodated the scullery and a water closet. After the Act of 1774 it grew larger and could also include bedrooms and storage rooms in more than one storeys. A representative example of these early dwellings is presented in figure 7:

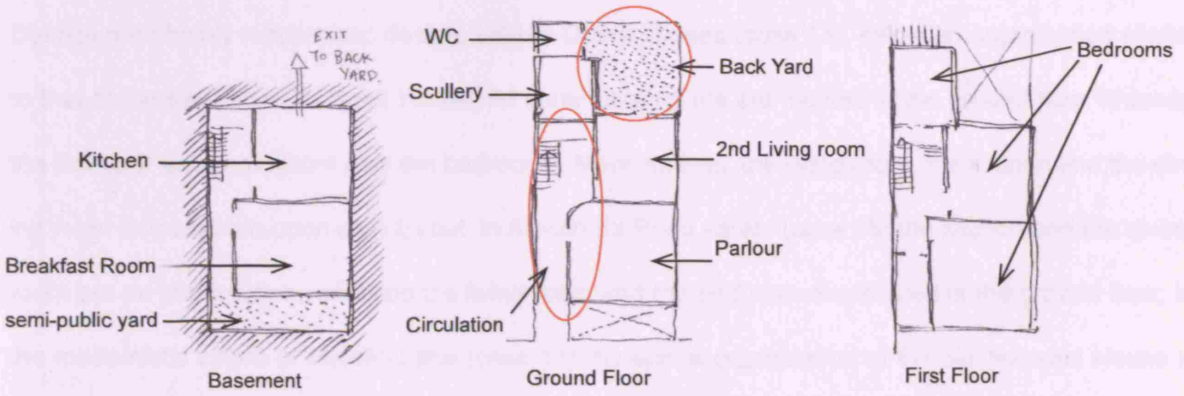


Figure. 7

This report also focuses on five significant types of Terraced Houses that were mostly developed in the 19th century (cases 7-11). In all these cases, some of the basic rules regarding the organization of the house are preserved. The parlour is always at the front of the ground floor, the kitchen faces the back yard and the bedrooms are located on the first or the second floor. However these cases present some important differences in their overall spatial layout. In case 7 the main entrance of the house leads directly to the parlour while the staircase is put in the middle of the dwelling. In case 8 the distribution corridor of the ground floor crosses the whole building, leading straight to the back yard projection. In case 9, the main entrance also leads into the parlour but the staircase is incorporated to the kitchen of the house, leading directly in the back bedroom. In case 10 the kitchen is located in the back yard projection while there is a study and an additional storage room on the second floor. Finally, case 10 presents the 19th-century, working-class Terraced House. This type is very similar to the Building Acts' Class IV but it also includes a third bedroom on the first floor of the back yard projection.

c. Presentation of the Post-WW2 Sample

As aforementioned, the post-WW2 sample does not comprise of prototype plans but of built examples that represent the evolution of the Terraced House since the 1950's. The following is a brief presentation of the case studies which highlights some of their key characteristics.

Case 12 is Willow Road houses. Although the uniform façade of the building may be confusing, it actually comprises of three spacious dwellings in a row. The kitchen and the dining room along with the garage are located in the ground floor whereas the living room is on the first floor giving access to a small terrace. Cases 13 and 14 are two of the dwelling types that compose Fleet Road housing estate. In both types the kitchen is located in the ground floor and the bedrooms are scattered in both floors. Despite their highly modernistic design, Linden Grove houses (case 15), follow an organization similar to that of the traditional Terraced House. All communal rooms are located in the ground floor whereas the first floor accommodates only the bedrooms. Nevertheless, the living room, the kitchen and the dining room formulate an open-plan layout. In Alexandra Road estate (case 16) the kitchen and the dining room are on the first floor whereas the living room and the bedroom are located in the ground floor. In the modernistic estate of Maiden Lane (case 17) the spatial organization of the old Terraced House is inverted. The main entrance leads in the ground floor which is occupied only by bedrooms while the living room and the kitchen are on the first floor.

The spacious dwellings of Grand Union Canal (case 18) turn their back to the road. The communal spaces are organized in an open plan on the first floor while the bedrooms are located on the second and the ground floor. Angell Town housing scheme (case 19) almost imitates the traditional Terraced House typology. The plan is organized in two zones - circulation and stasis - with the living room and the parlour as terminal spaces located in the ground floor. In Lonsdale Place houses (case 20), the bedrooms have access to a yard (ground floor) and a terrace (second floor) at the back of the house while the communal spaces are located on the first floor. D'Avoine's Slim Houses (cases 22 - 23) interpret the Terraced House typology in a completely different way. The dwellings do not leave space for a back yard but they occupy the whole building site, the 'traditional' back yard being substituted by a great terrace on the first floor. The rooms in the ground floor are organized around small yards which also function as light wells. In Millenium Village row houses (case 23) the communal spaces are in the

ground floor, facing both the main road and a back yard. In Coin Street estate (case 24) the path to the living room almost crosses the house's kitchen, an arrangement which is very unusual for a contemporary house. In Straighstmouth scheme (case 25) the communal functions of the house are split in two floors. The kitchen is at the front of the ground floor whereas the living room is on the first floor, providing access to a terrace. In the compact houses of Crown Place Mews (case 26) the functions are divided in three storeys: the bedrooms and a garage are in the ground floor, the master bedroom, the kitchen and the dining area are on the first floor while the living room is on the second floor. Finally one of the housing typologies of Donnybrook Quarter estate (case 27) has all its spaces oriented towards a large side terrace, 'escaping' from the usually dominant concept of the front / back layout organization.

Chapter 5: Analysing the Case Studies

The above two sheets present the analysis of the case studies in graphs which are justified from the exterior of the house and a collective table of the graphs' syntactic measures and topological properties.

Case no	Case	Year	Number of Spaces	Rings	Number of A spaces		Number of B spaces		Number of C spaces		Number of D spaces		Living Room Space Type	Kitchen Space Type	Mean Depth from Entrance	Mean Depth from Living Room	Mean Depth from Kitchen	Mean Depth from First Circulation Space	Control Value (entrance spaces)	Control Value (Living Rooms)	Integration Order Corridor/Living Rooms/ Kitchen/ Bedrooms	Mean Integration
1	1667 Class IV	After 1667	10	1	4	40.0%	2	20.0%	4	40.0%	0	0.0%	A	C	2.70	2.70	2.30	1.80	2.833	0.250		0.8807
2	1667 Class III	After 1667	15	4	5	33.3%	2	13.3%	3	20.0%	5	33.3%	A	B	2.60	3.00	3.00	2.07	3.000	0.200		0.9563
3	1667 Class II	After 1667	20	3	7	35.0%	4	20.0%	6	30.0%	3	15.0%	A	C	3.75	3.50	3.90	2.55	0.700	0.200		0.8016
4	1774 Class IV	After 1774	10	1	4	40.0%	3	30.0%	3	30.0%	0	0.0%	A	C	2.80	2.80	2.20	1.90	2.833	0.250		0.7413
5	1774 Class III	After 1774	16	3	6	37.5%	2	12.5%	3	18.8%	5	31.3%	A	D	2.62	3.00	3.13	2.56	2.833	0.200		0.9700
6	1774 Class II	After 1774	21	3	8	38.1%	4	19.0%	6	28.6%	3	14.3%	A	C	3.76	3.47	3.95	2.52	0.700	0.200		0.7938
7	Central Staircase Type	19th Century	11	1	3	27.3%	5	45.5%	3	27.3%	0	0.0%	B	C	3.82	2.91	2.55	2.18	1.333	1.333		0.7297
8	Central Staircase & Hallway Leading to Back	19th Century	12	1	5	41.7%	3	25.0%	4	33.3%	0	0.0%	A	C	2.08	3.00	2.67	2.08	3.500	0.200		0.8321
9	Side Staircase Type	19th Century	9	1	3	33.3%	3	33.3%	3	33.3%	0	0.0%	B	C	3.33	2.44	1.78	1.78	2.444	2.444		0.8718
10	Hallway Leading to Back	19th Century	17	3	6	35.3%	4	23.5%	3	17.6%	4	23.5%	C	C	4.06	3.59	2.88	2.47	1.833	0.667		1.2070
11	Low Class Type - North London	19th-20th Centu	11	1	6	54.5%	5	45.5%	0	0.0%	0	0.0%	A	C	2.82	2.82	2.27	1.81	2.667	0.250		0.8484
12	Willow Road	1940	18	1	9	50.0%	6	33.3%	3	16.7%	0	0.0%	A	C	4.61	3.44	3.82	2.94	2.833	0.250		0.7917
13	Fleet Road - Type 1	1967	12	3	2	16.7%	0	0.0%	6	50.0%	4	33.3%	D	C	3.33	2.58	2.50	2.33	1.167	1.167		1.0240
14	Fleet Road - Type 2	1967	14	2	4	28.6%	4	28.6%	4	28.6%	2	14.3%	C	A	4.07	4.57	3.29	2.36	2.250	1.000		0.7781
15	Linden Grove	1971	14	2	6	42.9%	3	21.4%	3	21.4%	2	14.3%	D	C	3.64	2.84	2.71	1.93	3.333	1.167		1.0324
16	Alexandra Road	1977	11	1	5	45.5%	4	36.4%	2	18.2%	0	0.0%	C	A	3.27	2.46	3.54	1.90	1.250	1.250		0.8617
17	Maiden Lane	1982	13	0	5	38.5%	8	61.5%	0	0.0%	0	0.0%	A	A	4.04	3.80	4.46	2.31	1.333	0.250		1.3498
18	Grand Union Canal	1985	16	1	6	37.5%	6	37.5%	4	25.0%	0	0.0%	C	C	4.56	3.94	3.13	2.81	2.500	0.700		0.8107
19	Angell Town	1993	14	0	7	50.0%	7	50.0%	0	0.0%	0	0.0%	A	B	4.29	3.50	3.36	2.57	2.500	0.250		0.7957
20	Lonsdale Place	1995	16	2	6	37.5%	4	25.0%	6	37.5%	0	0.0%	C	A	4.13	3.50	3.50	2.56	1.200	0.250		0.7929
21	Slim House I	1998	16	2	5	31.3%	4	25.0%	7	43.8%	0	0.0%	B	A	4.25	2.50	3.44	2.50	1.750	1.750		0.7663
22	Slim House II	2000	16	3	3	18.8%	6	37.5%	4	25.0%	4	25.0%	C	C	4.31	2.50	2.56	3.50	1.333	0.976		0.7706
23	Millenium Village	2001	14	1	5	35.7%	6	42.9%	3	21.4%	0	0.0%	C	C	4.07	2.93	3.73	2.40	2.333	1.250		0.8165
24	Coin Street	2001	19	1	7	36.8%	8	42.1%	4	21.1%	0	0.0%	B	B	4.89	4.68	3.84	3.11	2.500	1.500		0.7602
25	Straightsmouth	2003	16	0	9	56.3%	7	43.8%	0	0.0%	0	0.0%	B	A	3.69	3.06	3.69	2.75	4.000	1.200		0.8455
26	Crown Place Mews	2003	15	2	5	33.3%	5	33.3%	4	26.7%	1	6.7%	B	A	3.13	3.87	3.33	2.67	3.333	1.500		0.8470
27	Donnybrook Quarter - Type 2	2004	8	1	3	37.5%	2	25.0%	3	37.5%	0	0.0%	C	C	3.38	2.63	2.00	2.00	0.667	0.667		0.8349

Table 1 (extract of main table): Common configurational patterns in the pre- and post-WW2 case studies

It is a fact that the pre-WW2 Terraces are very different to the post-WW2 houses in regards to their architectural style and the organization of their plan. However, as the above table shows, these two groups have some common characteristics with respect to their spatial configuration. It is apparent that in the greatest proportion of the case studies, the circulation space is the most integrated space of the dwelling, having at the same time the greatest control value. It is also the most shallow space of the house since its mean depth is at the bottom of the mean depth order.

Nevertheless, the table of the case studies' syntactic values reveals a series of important differences in their spatial configuration (table 2).

	Average Value in pre-WW2 cases		Average Value in the Entire Sample		Average Value in post-WW2 cases
Mean Depth from Entrance	3.12	<	3.63	<	3.98
Mean Depth from Kitchen	2.78	<	2.99	<	3.14
Mean Depth from Living Room / Parlour	3.02	<	3.17	<	3.28
Mean Depth from First Circulation Space	2.16	<	2.38	<	2.54
Control Value of First Circulation Space	2.24	>	2.18	>	2.18
Control Value of Living Room / Parlour	0.56	<	0.79	<	0.95
Mean Integration Value	0.88	~	0.87	~	0.87

Table 2: Differences in the spatial configuration properties of the case studies

Although the average mean integration of the two groups of case studies remains almost unchanged, the average value of the mean depth and the control of the main rooms of the house follows two separate patterns. In the post-WW2 dwelling the mean depth of the kitchen, the living room, the entrance and the circulation space is greater than that of the traditional Terraced House. This means that with respect to the general spatial layout of the houses, all spaces of the new houses are syntactically more distant to each other than in the old Terraces. In addition, the control value of the living room increases (it is almost doubled) whereas the control value of the main distribution corridor decreases. This generally means that in the new dwellings the living room is much better connected to its neighbours, playing a more central role for the family social life while in regards to the 'traditional' Terraced Houses, the importance of the functional role of the circulation spaces is greater. The integration order of the basic functions of the house is also dissimilar. The generally orderly pattern that characterizes the pre-WW2 sample radically changes in the post-WW2 cases (table 3).

Case no	Case	Year	Number of Spaces	Rings	Number of A spaces		Number of B spaces		Number of C spaces		Number of D spaces		Living Room Space	Kitchen Space Type	Mean Depth from Entrance	Mean Depth from Living Room	Mean Depth from Kitchen	Mean Depth from First Circulation Space	Control Value entrance spaces	Control Value Living Rooms	Integration Order Entrance/Living Room/ Kitchen/ Bedroom	Mean Integration
1	1667 Class IV	After 1667	10	1	4	40.0%	2	20.0%	4	40.0%	0	0.0%	A	C	2.70	2.70	2.20	1.80	2.833	0.250		0.8807
2	1667 Class III	After 1667	15	4	5	33.3%	3	13.3%	3	20.0%	4	33.3%	A	D	2.80	3.00	3.00	2.07	3.000	0.200		0.9583
3	1667 Class II	After 1667	20	3	7	35.0%	4	20.0%	6	30.0%	3	15.0%	A	C	3.75	3.50	3.90	2.55	0.700	0.200		0.8016
4	1774 Class IV	After 1774	10	1	4	40.0%	3	30.0%	3	30.0%	0	0.0%	A	C	2.80	2.80	2.20	1.90	2.833	0.250		0.7413
5	1774 Class III	After 1774	16	3	6	37.5%	2	12.5%	3	18.8%	5	31.3%	A	D	2.82	3.00	3.13	2.56	2.833	0.200		0.9700
6	1774 Class II	After 1774	21	3	8	38.1%	4	19.0%	6	28.6%	3	14.3%	A	C	3.76	3.47	3.95	2.52	0.700	0.200		0.7938
7	Central Staircase Type	19th Century	11	1	3	27.3%	6	45.5%	3	27.3%	0	0.0%	B	C	3.82	2.91	2.55	2.18	1.333	1.333		0.7297
8	Central Staircase & Hallway Leading to Back	19th Century	12	1	5	41.7%	3	25.0%	4	33.3%	0	0.0%	A	C	2.08	3.00	2.67	2.08	3.500	0.200		0.8321
9	Side Staircase Type	19th Century	9	1	3	33.3%	3	33.3%	3	33.3%	0	0.0%	B	C	3.33	2.44	1.78	1.78	2.444	2.444		0.8718
10	Hallway Leading to Back	19th Century	17	3	5	29.4%	4	23.5%	3	17.6%	4	23.5%	C	C	4.06	3.59	2.88	2.47	1.833	0.667		1.2070
11	Low Class Type - North London	19th-20th Century	11	1	4	36.4%	3	27.3%	4	36.4%	0	0.0%	C	C	2.82	2.82	2.27	1.91	2.667	0.250		0.8484
12	Willow Road	1940	19	1	9	47.4%	4	21.1%	3	15.7%	0	0.0%	C	C	4.61	3.44	3.83	2.94	2.833	0.250		0.7917
13	Fleet Road - Type 1	1967	12	3	2	16.7%	3	0.0%	3	0.0%	4	33.3%	C	C	3.33	2.58	2.50	2.33	1.167	1.167		1.0240
14	Fleet Road - Type 2	1967	14	2	4	28.6%	4	28.6%	4	28.6%	2	14.3%	C	A	4.07	4.57	3.29	2.36	2.250	1.000		0.7781
15	Linden Grove	1971	14	2	4	42.9%	3	21.4%	3	21.4%	2	14.3%	D	C	3.64	2.64	2.71	1.93	3.333	1.167		1.0324
16	Alexandra Road	1977	11	1	5	45.5%	4	36.4%	2	18.2%	0	0.0%	C	A	3.27	2.45	3.64	1.90	1.250	1.250		0.8617
17	Maiden Lane	1982	13	0	5	38.5%	8	61.5%	0	0.0%	0	0.0%	A	A	4.54	3.69	4.46	2.31	1.333	0.250		1.3498
18	Grand Union Canal	1985	16	1	6	37.5%	6	37.5%	4	25.0%	0	0.0%	C	C	4.56	3.94	3.13	2.81	2.500	0.700		0.8107
19	Angell Town	1992	14	0	7	50.0%	7	50.0%	0	0.0%	0	0.0%	A	B	4.29	3.50	3.36	2.57	2.500	0.250		0.7942
20	Lonsdale Place	1995	16	2	6	37.5%	4	25.0%	6	37.5%	0	0.0%	C	A	4.13	3.50	3.50	2.56	1.200	0.250		0.7929
21	Slim House I	1998	16	2	5	31.3%	4	25.0%	7	43.8%	0	0.0%	B	A	4.25	2.50	3.44	2.50	1.750	1.750		0.7953
22	Slim House II	2000	16	3	3	18.8%	6	37.5%	4	25.0%	3	25.0%	C	C	4.31	2.50	2.56	3.50	1.333	0.976		0.7706
23	Millenium Village	2001	14	1	6	85.7%	6	42.9%	3	21.4%	0	0.0%	C	C	4.07	2.93	3.73	2.40	2.333	1.250		0.8165
24	Coin Street	2001	19	1	7	36.8%	6	42.1%	4	21.1%	0	0.0%	B	B	4.89	4.68	3.84	3.11	2.500	1.500		0.7602
25	Straightsmouth	2003	16	0	9	56.3%	7	43.8%	0	0.0%	0	0.0%	B	A	3.69	3.06	3.69	2.75	4.000	1.200		0.8455
26	Crown Place Mews	2003	15	2	6	40.0%	4	26.7%	4	26.7%	1	6.7%	B	A	3.13	3.87	3.33	2.67	3.333	1.500		0.8479
27	Donnybrook Quarter - Type 2	2004	8	1	3	37.5%	2	25.0%	2	25.0%	1	12.5%	C	C	3.38	2.63	2.80	2.00	0.667	0.667		0.8348

order

disorder

Table 3 (extract of the main table): Changes in the integration order and the graphs' topological properties

Table 3 also depicts the changes regarding the topological attributes of the case studies. It is apparent that in the pre-WW2 houses, the A-type parlour has been substituted by the better connected living room whereas the kitchen, which used to be part of a ringy structure, has in many cases turned into a terminal space. Moreover, the largest proportion of the rooms in the old houses are A spaces while in the post-WW2 sample this is not necessarily the case. The above phenomena reveal that not only are the pre- and post-WW2 Terraces different to each other with respect to their architectural style and the layout of their plans but they also formulate two syntactically distinctive groups.

The following analysis sets out to explore what these differences imply for the changes in the English domestic culture and how those may be reflected in the spatial configuration of the dwellings, based on the hypothesis that the syntactic and topological properties of the graphs express the social function of the houses and the programme of the inhabitants-visitors and inhabitants-inhabitants interfaces.

a. The pre-WW2 Terraced House

Case Studies			Space Types								
Case no	Case	Year	Number of Spaces	Rings	Number of A spaces		Number of B spaces		Number of C spaces		Number of D spaces		Living Room Space Type	Kitchen Space Type
1	1667 Class IV	After 1667	10	1	4	40.0%	2	20.0%	4	40.0%	0	0.0%	A	C
2	1667 Class III	After 1667	15	4	5	33.3%	2	13.3%	3	20.0%	5	33.3%	A	D
3	1667 Class II	After 1667	20	3	7	35.0%	4	20.0%	6	30.0%	3	15.0%	A	C
4	1774 Class IV	After 1774	10	1	4	40.0%	3	30.0%	3	30.0%	0	0.0%	A	C
5	1774 Class III	After 1774	16	3	6	37.5%	2	12.5%	3	18.8%	5	31.3%	A	D
6	1774 Class II	After 1774	21	3	8	38.1%	4	19.0%	6	28.6%	3	14.3%	A	C
7	Central Staircase Type	19th Century	11	1	3	27.3%	5	45.5%	3	27.3%	0	0.0%	B	C
8	Central Staircase & Hallway Leading to Back	19th Century	12	1	5	41.7%	3	25.0%	4	33.3%	0	0.0%	A	C
9	Side Staircase Type	19th Century	9	1	3	33.3%	3	33.3%	3	33.3%	0	0.0%	B	C
10	Hallway Leading to Back	19th Century	17	3	6	35.3%	4	23.5%	3	17.6%	4	23.5%	C	C
11	Low Class Type - North London	19th-20th Century	11	0	6	54.5%	5	45.5%	0	0.0%	0	0.0%	A	C

Table 4 (extract of the main table): The number and proportion of A spaces and the kitchen and parlour space types are highlighted.

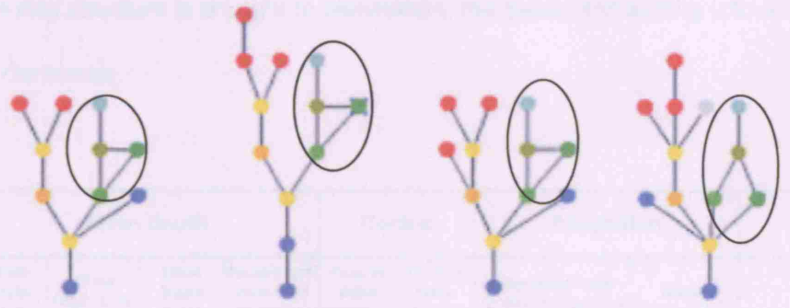


Figure 8: Four examples of the terminal groups of spaces (highlighted)

In regards to the traditional Terraced Houses, some of their common properties become obvious just by examining the table of their topological attributes. The largest proportion of the rooms in the houses are A spaces. The kitchen always belongs in a ringy structure while the formal living room of the house (the parlour) is in most of the cases a terminal space. Moreover in 8 out of 11 cases, bedrooms

are only terminal spaces. If we look at the overall spatial structure of the pre-war dwellings, it becomes obvious that - if we initially exclude the greatest Building Act classes - the spatial structure of the house is based on a central 'spine' comprised of the circulation spaces, formulating a 'tree'. This may at first sound as an a mistaken observation since in all houses, the kitchen, the scullery and the back yard are connected to each other in a ring structure. However one could claim that the Terraced House is not a tree of spaces but a 'tree of functions'. The offices (i.e. utility spaces) compose a 'terminal group of spaces' connected to the rest of the configuration only via a single node, clearly defining themselves as a distinctive sub-graph (fig 8).

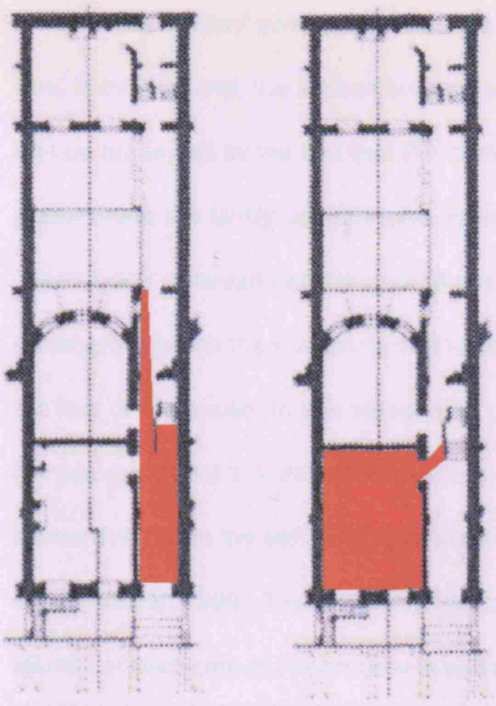
The 'tree of functions' structure also applies for the upper Terraced House classes. Those initially appear to formulate a more complicated ringy graph, with the services put in the basement having access to the back garden and being accessible from a small yard below the street level. But if we consider how those spaces function we might realize that things are not that different. We have to remember that the high-class Terraces accommodated the upper social classes. At that time all upper class families had servants. The basement rooms used to be the servants' domain and the secondary entrance to the house their only way in. The 'gentleman' or a domestic visitor would never spend any time in the kitchen or enter the house from the basement. Thus, from the point of view of the basic inhabitants of the house the ring structure is brought to elimination, the basement turning into an almost independent attachment to the house.

Mean Depth				Control		Integration		
Mean Depth from Entrance	Mean Depth from Living Roon	Mean Depth from Kitchen	Mean Depth from First Circulation Space	Control Value (entrance space)	Control Value (Living Room)	Integration Order Corridors/Living Room/ Kitchen/ Bedrooms	Mean Integration	Case
2.70	2.70	2.30	1.80	2.833	0.250		0.8807	1667 Class IV
2.60	3.00	3.00	2.07	3.000	0.200		0.9563	1667 Class III
3.75	3.50	3.90	2.55	0.700	0.200		0.8016	1667 Class II
2.80	2.80	2.20	1.90	2.833	0.250		0.7413	1774 Class IV
2.62	3.00	3.13	2.56	2.833	0.200		0.9700	1774 Class III
3.76	3.47	3.95	2.52	0.700	0.200		0.7938	1774 Class II
3.82	2.91	2.55	2.18	1.333	1.333		0.7297	Central Staircase Type
2.08	3.00	2.67	2.08	3.500	0.200		0.8321	Central Staircase & Hallway Leading to Back
3.33	2.44	1.78	1.78	2.444	2.444		0.8718	Side Staircase Type
4.06	3.59	2.88	2.47	1.833	0.667		1.2070	Hallway Leading to Back
2.82	2.82	2.27	1.81	2.667	0.250		0.8484	Low Class Type - North London

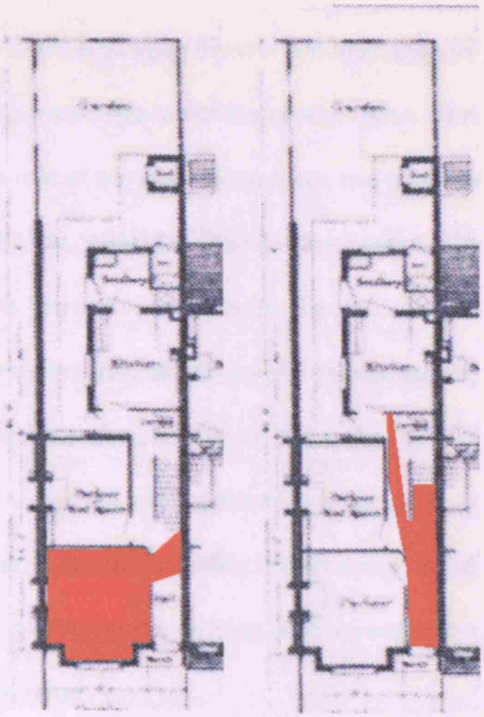
Table 5 (extract of the main table) : Syntactic analysis of the pre-WW2 sample. (For the integration order: yellow=circulation, green=kitchen, blue=parlour, red=bedroom)

Examining the syntactical values with respect to the spatial configuration of the pre-WW2 sample, some very clear patterns start to emerge. In all cases the bedrooms are the most segregated spaces within the house whereas the most integrated areas are the circulation spaces. Having a look at the mean depth value it is apparent that circulation spaces are (on average) the closest ones to the rest of the rooms of the dwelling. A closer look to the above table reveals that the spatial configuration of the case studies is characterized by two distinctive patterns of integration / segregation. All houses, apart from the classes II and III of both Building Acts, follow identical integration order as far as their basic functional elements are concerned (circulation areas, kitchen, parlour, bedrooms). The kitchen is the most integrated space after the corridors whereas the parlour is the second most segregated room after the bedrooms. The mean depth of the above spaces follows the same order. Those spatial relations are inverted in the highest classes of the Terraced House, where the kitchen is less integrated than the parlour(s).

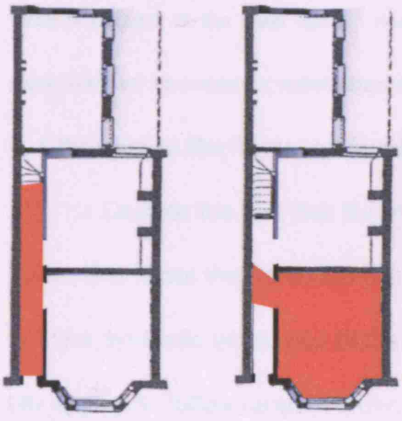
These differentiations in the spatial layout of the dwellings as well as the topological or syntactical attributes they share, lead us to the definition of a common genotypical ground for all the cases which in a second level is divided in two separate genotypes. The integration patterns show that the spatial configuration of Terraced houses is centered around the uniting and dividing function of the transition spaces. All functions in a terraced house (from sleeping to accommodating visitors) occupy terminal areas, attached to a highly integrated central 'spine' of circulation spaces while the bedrooms are at the bottom of the integration order. The spatial layout of the houses puts the interfaces between the different inhabitants as well as the interfaces between the visitors and the inhabitants in a very strong organization. On one hand, random interactions between the occupants are minimized (since the domestic functions lie behind doors) and on the other, the visitors' movement within the house is limited and highly controlled (since they are kept in a dead end space). The isovists of the interior of some built examples, depict the limited visual field the visitors of a Terraced House have (fig. 9). It is evident that when they enter the house, they cannot see but the circulation space or the living room (when the entrance leads directly into it) but even in this case they do not come in contact with the rest of the dwelling.



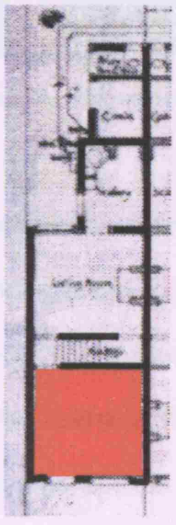
Bedford Square (Isovist from the Entrance and the Parlour)



Noel Park (Isovist from Entrance and the Parlour)



Plaistow (Isovist from Entrance and the Parlour)



Central Staircase Type.
Entrance leads directly into the parlour

Figure. 9: Isovists

The houses' genotype reflects the social status of the families dividing them in two main categories. In the first one, the kitchen belongs to the most highly integrated spaces of the configuration. This can be explained by the fact that the kitchen used to play the role of the main living room and also the place where the family used to have its meals (Lawrence 1987, pp. 104-112) whereas the parlour was 'sealed' and reserved only for special events. The upper class Terraced House forms the second subgenotype in which the kitchen moves towards the side of segregation despite its several connections to the rest of the house. In this category of dwellings though, the kitchen ceases to be the living room of the occupants but it is transformed into a hidden service room. Social factors determine a hierarchy of rooms that divide the servants' quarters from the employers' and designate certain rooms according to class (Attfield, 1999). The pre-WW2 Terraced House is a strong-programme building which protects the identity of each one of the occupants under a strong 'collection code'.

Case	Year	Number of Spaces	Rings	Number of A spaces		Number of B spaces		Number of C spaces		Number of D spaces		Living Room Space Type	Kitchen Space Type	Mean Depth from Entrance	Mean Depth from Living Room	Mean Depth from Kitchen	Mean Depth from First Circulation Space	Control Value (entrance space)	Control Value (Living Room)	Integration Order Corridors/Living Room/ Kitchen/ Bedrooms
Willow Road	1940	18	1	9	50.0%	6	33.3%	3	16.7%	0	0.0%	A	C	4.61	3.44	3.82	2.94	2.833	0.250	
Fleet Road - Type 1	1967	12	3	2	16.7%	0	0.0%	6	50.0%	4	33.3%	D	C	3.33	2.58	2.50	2.33	1.167	1.167	
Fleet Road - Type 2	1967	14	2	4	28.6%	4	28.6%	4	28.6%	2	14.3%	C	A	4.07	4.57	3.29	2.36	2.250	1.000	
Linden Grove	1971	14	2	6	42.9%	3	21.4%	3	21.4%	2	14.3%	D	C	3.64	2.64	2.71	1.93	3.333	1.167	
Alexandra Road	1977	11	1	5	45.5%	4	36.4%	2	18.2%	0	0.0%	C	A	3.27	2.45	3.54	1.90	1.250	1.250	
Maiden Lane	1982	13	0	5	38.5%	8	61.5%	0	0.0%	0	0.0%	A	A	4.04	3.69	4.46	2.31	1.333	0.250	
Grand Union Canal	1985	16	1	6	37.5%	6	37.5%	4	25.0%	0	0.0%	C	C	4.56	3.94	3.13	2.81	2.500	0.700	
Angell Town	1993	14	0	7	50.0%	7	50.0%	0	0.0%	0	0.0%	A	B	4.29	3.50	3.36	2.57	2.500	0.250	
Lonsdale Place	1995	16	2	6	37.5%	4	25.0%	6	37.5%	0	0.0%	C	A	4.13	3.50	3.50	2.56	1.200	0.250	
Slim House I	1998	16	2	5	31.3%	4	25.0%	7	43.8%	0	0.0%	B	A	4.25	2.50	3.44	2.50	1.750	1.750	
Slim House II	2000	16	3	3	18.8%	6	37.5%	4	25.0%	4	25.0%	C	C	4.31	2.50	2.56	3.50	1.333	0.978	
Millenium Village	2001	14	1	5	35.7%	6	42.9%	3	21.4%	0	0.0%	C	C	4.07	2.93	3.73	2.40	2.333	1.250	
Coin Street	2001	19	1	7	36.8%	8	42.1%	4	21.1%	0	0.0%	B	B	4.89	4.68	3.84	3.11	2.500	1.500	
Straightsmouth	2003	16	0	9	56.3%	7	43.8%	0	0.0%	0	0.0%	B	A	3.69	3.06	3.69	2.75	4.000	1.200	
Crown Place Mews	2003	15	2	5	33.3%	5	33.3%	4	26.7%	1	6.7%	B	A	3.13	3.87	3.33	2.67	3.333	1.500	
Donnybrook Quarter - Type 2	2004	8	1	3	37.5%	2	25.0%	3	37.5%	0	0.0%	C	C	3.38	2.63	2.00	2.00	0.667	0.667	

Table 6 (extract of the main table) : Analysis of the post-WW2 case studies (for the integration order: yellow=circulation, green=kitchen, blue=parlour, red=bedroom)

b. Changes in the Terraced House spatial organization after the Second World War

Despite the fact that the traditional Terraced House is characterized by strong genotypical attributes, this is not the case with the post-WW2 sample. The above table, presenting both the topological and the syntactic properties of the case studies may not be legible at first sight since the values generally appear to follow random order. There are hardly any patterns regarding the space type classification and the maximum mean depth value seems to go to the kitchen from the living room and vice-versa. Furthermore the last three places in the integration order table are not clearly organized (table 6).

However, if there is one pattern that is clear in the table, this is the integration level of the circulation spaces. The corridors once more occupy the first place in the integration order section and they also have the minor mean depth of all other spaces. Examining the justified graphs of the case studies

we can realize that the new Terraces follow a structure very similar to the traditional one. In a surprisingly much more obvious way all the case studies are built on the concept of the internal central 'spine'. Figure 10 depicts this fundamental property of the post-WW2 terraced houses. A significant difference to the previous period is that in the new 'spines' may also include a living room or a kitchen, a first implication about the changes in the domestic culture.

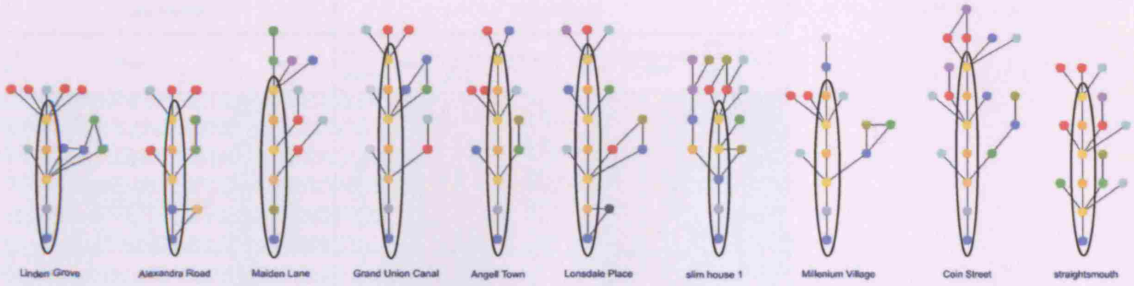


Figure 10: Justified graphs of some post-WW2 case studies and the 'central spine' structure

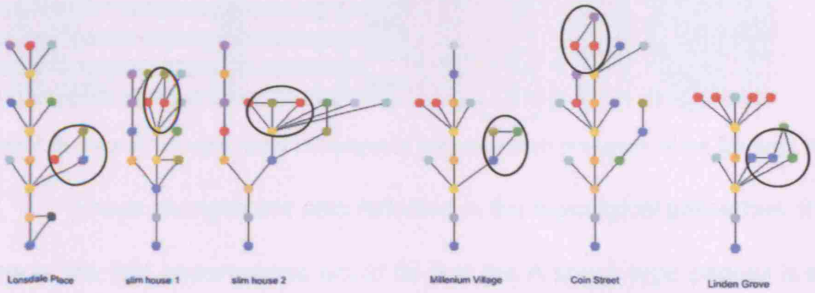


Figure 11: The 'terminal rings' found in some of the post-WW2 London Terraced Houses

The new Terraces are also function trees. Figure 11 demonstrates this characteristic spatial configuration pattern. However, the terminal rings are not rings of utility spaces but in most of the cases they are composed by interconnected living-rooms, kitchens and dining rooms or bedrooms connected via a common yard or terrace. The old fashioned parlour has disappeared being substituted by the common-for-all living room which is very often directly connected to the kitchen. The integration of the living room with the kitchen and the dining area demonstrates the radical changes in the Terraced Houses' programme. The interfaces between the inhabitants are not organized in a strictly hierarchical order anymore but interaction is encouraged. The kitchen does not represent a hidden living room and a 'private' workspace but a part of the 'public' space of the house, a facility not to be embarrassed about. The overall domestic space layout moves towards the side of an 'integration' code. The diagram of the following page represents this fundamental change in the London Terraced House social structure:

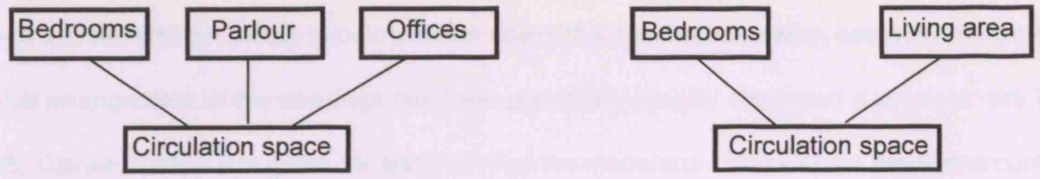


Figure 12: Changes in the Terraced House building programme

Case Studies			Space Types							
Case no	Case	Year	Number of Spaces	Rings	Number of A spaces	Number of B spaces	Number of C spaces	Number of D spaces	Living Room Space Type	Kitchen Space Type
1	1667 Class IV	After 1667	10	1	4 40.0%	2 20.0%	4 40.0%	0 0.0%	A	C
2	1667 Class III	After 1667	15	4	5 33.3%	2 13.3%	3 20.0%	5 33.3%	A	D
3	1667 Class II	After 1667	20	3	7 35.0%	4 20.0%	6 30.0%	3 15.0%	A	C
4	1774 Class IV	After 1774	10	1	4 40.0%	3 30.0%	3 30.0%	0 0.0%	A	C
5	1774 Class III	After 1774	16	3	6 37.5%	2 12.5%	3 18.8%	5 31.3%	A	D
6	1774 Class II	After 1774	21	3	8 38.1%	4 19.0%	6 28.6%	3 14.3%	A	C
7	Central Staircase Type	19th Century	11	1	3 27.3%	5 45.5%	3 27.3%	0 0.0%	B	C
8	Central Staircase & Hallway Leading to Back	19th Century	12	1	5 41.7%	3 25.0%	4 33.3%	0 0.0%	A	C
9	Side Staircase Type	19th Century	9	1	3 33.3%	3 33.3%	3 33.3%	0 0.0%	B	C
10	Hallway Leading to Back	19th Century	17	3	5 29.4%	4 23.5%	3 17.6%	4 23.5%	C	C
11	LowClass Type - North London	19th-20th Century	11	1	5 45.5%	5 45.5%	0 0.0%	0 0.0%	A	C
12	WillowRoad	1940	18	1	9 50.0%	6 33.3%	3 16.7%	0 0.0%		C
13	Fleet Road - Type 1	1967	12	3	2 16.7%	0 0.0%	6 50.0%	4 33.3%	D	C
14	Fleet Road - Type 2	1967	14	2	4 28.6%	4 28.6%	4 28.6%	2 14.3%	C	A
15	Linden Grove	1971	14	2	6 42.9%	3 21.4%	3 21.4%	2 14.3%	D	C
16	Alexandra Road	1977	11	1	5 45.5%	4 36.4%	2 18.2%	0 0.0%	C	A
17	Maiden Lane	1982	13	0	5 38.5%	8 61.5%	0 0.0%	0 0.0%	A	A
18	Grand Union Canal	1985	16	1	6 37.5%	6 37.5%	4 25.0%	0 0.0%	C	C
19	Angell Town	1993	14	0	7 50.0%	7 50.0%	0 0.0%	0 0.0%	A	B
20	Lonsdale Place	1995	16	2	6 37.5%	4 25.0%	6 37.5%	0 0.0%	C	A
21	Slim House I	1998	16	2	5 31.3%	4 25.0%	7 43.8%	0 0.0%	B	A
22	Slim House II	2000	16	3	3 18.8%	6 37.5%	4 25.0%	4 25.0%	C	C
23	Millenium Village	2001	14	1	5 35.7%	6 42.9%	3 21.4%	0 0.0%	C	C
24	Coin Street	2001	19	1	7 36.8%	8 42.1%	4 21.1%	0 0.0%	B	B
25	Straightsmouth	2003	16	0	9 56.3%	7 43.8%	0 0.0%	0 0.0%	B	A
26	Crown Place Mews	2003	15	2	5 33.3%	5 33.3%	4 26.7%	1 6.7%	B	A
27	Donnybrook Quarter - Type 2	2004	8	1	3 37.5%	2 25.0%	3 37.5%	0 0.0%	C	C

Table 7 (extract of the main table) : Changes in the topological properties of the Terraced Houses' graph

These changes are also reflected in the topological properties of the justified graphs, in table 7. One of the first observations would be that the A-space-type parlour is substituted by the B- or C-type living room. The living room is now connected to the kitchen, the dining room, a terrace or the back yard, becoming the point of reference for the inhabitants' domestic social life. We have to add here that although the sealed best room has been abolished as an outdated remnant of the old unquestioned social hierarchy, part of its function as a 'museum' for the best furniture and china has been reincarnated to a semiologically important corner in the new living room. Those objects are not exhibited in an isolated room anymore but people still feel the need to have a place to put their non-functional possessions (Attfield 1999, p. 79). The syntactical positional order of spaces may have changed but the concept of the 'shrine in a Chinese peasant's cottage' (Lawrence 1987, p. 90) is preserved.

Moreover in many cases the kitchen is a terminal space. This probably happens because it is often located on the first or second floor (not having access in a back yard) but it also implies the change to its status, from the basic living room of the working-class house to a function on a par with the rest. In many cases a separate space as a dining area is introduced. This is always directly connected to

the kitchen and in some cases (e.g. Maiden Lane) it mediates between the living room or a circulation space and the kitchen. It has to be mentioned here that the English eating behaviour in relation to the spatial arrangement of the dwellings has been previously broadly discussed (Lawrence 1987, Hanson 1998, Cieraad 1999). It is generally admitted that the modernistic ideas which separated cooking from eating in different rooms were met with great resistance by the English. It was found that "*even where an architect had deliberately left no room for eating in the kitchen, people managed to force a table into it in order to eat some of their meals there*" (Alderson 1962, p. 26).

Mean Depth from Entrance Increases

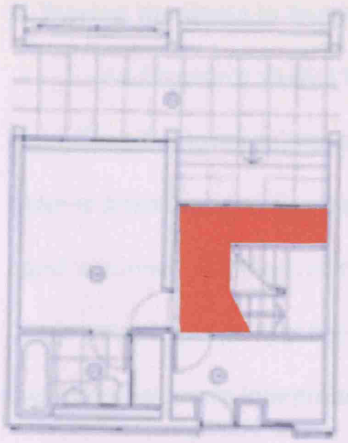
Mean Depth from Entrance	Mean Depth from Living Roon	Mean Depth from Kitchen	Mean Depth from First Circulation Space	Control Value (entrance space)	Control Value (Living Room)	Integration Order Corridors/Living Room/ Kitchen/ Bedrooms	Mean Integration	Case
2.70	2.70	2.30	1.80	2.833	0.250		0.8807	1667 Class IV
2.60	3.00	3.00	2.07	3.000	0.200		0.9563	1667 Class III
3.75	3.50	3.90	2.55	0.700	0.200		0.8016	1667 Class II
2.80	2.80	2.20	1.90	2.833	0.250		0.7413	1774 Class IV
2.62	3.00	3.13	2.56	2.833	0.200		0.9700	1774 Class III
3.76	3.47	3.95	2.52	0.700	0.200		0.7938	1774 Class II
3.82	2.91	2.55	2.18	1.333	1.333		0.7297	Central Staircase Type
2.08	3.00	2.67	2.08	3.500	0.200		0.8321	Central Staircase & Hallway Leading to Back
3.33	2.44	1.78	1.78	2.444	2.444		0.8718	Side Staircase Type
4.06	3.59	2.88	2.47	1.833	0.667		1.2070	Hallway Leading to Back
2.80	2.82	2.27	1.81	2.667	0.250		0.8484	Low Class Type - North London
4.61	3.44	3.82	2.94	2.833	0.250		0.7917	Willow Road
3.33	2.58	2.50	2.33	1.167	1.167		1.0240	Fleet Road - Type 1
4.07	4.57	3.29	2.36	2.250	1.000		0.7781	Fleet Road - Type 2
3.64	2.64	2.71	1.93	3.333	1.167		1.0324	Linden Grove
3.27	2.45	3.54	1.90	1.250	1.250		0.8617	Alexandra Road
4.04	3.69	4.46	2.31	1.333	0.250		1.3498	Maiden Lane
4.56	3.94	3.13	2.81	2.500	0.700		0.8107	Grand Union Canal
4.29	3.50	3.36	2.57	2.500	0.250		0.7957	Angell Town
4.13	3.50	3.50	2.56	1.200	0.250		0.7929	Lonsdale Place
4.25	2.50	3.44	2.50	1.750	1.750		0.7663	Slim House I
4.31	2.50	2.56	3.50	1.333	0.976		0.7706	Slim House II
4.07	2.93	3.73	2.40	2.333	1.250		0.8165	Millenium Village
4.89	4.68	3.84	3.11	2.500	1.500		0.7602	Coin Street
3.69	3.06	3.69	2.75	4.000	1.200		0.8455	Straightsmouth
3.13	3.87	3.33	2.67	3.333	1.500		0.8470	Crown Place Mews
3.38	2.63	2.00	2.00	0.667	0.667		0.8349	Donnybrook Quarter - Type 2

Table 8 (extract of the main table) : Syntactic properties of the London Terraced House

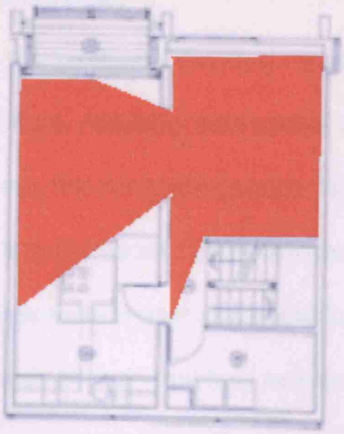
Despite the fact that the interfaces between the inhabitants express an integration code organization altering the traditional hierarchically organized domestic space, the visitors-inhabitants interface follows a merely different structure. The first thing that is apparent is that the mean depth of the spatial configuration of the house from the entrance increases dramatically (table 8). This means that domestic life has generally moved deeper within the house in relation to the public domain. The living room of the house may have changed its function from the point of view of the inhabitants, but the general spatial configuration of the dwelling as it is perceived by the visitors follows a different pattern. As noted in a previous paragraph, the new Terraces are also built around the central idea of the 'spine'. It is a fact that in most of our case studies, the visitors of such a house move on the chain of circulation spaces until they get to the living room. Therefore it appears that the concept of movement canalization is again dominant.

'Strangers' go where they are supposed to without crossing 'private' areas. Nevertheless, a noteworthy difference to the old Terraced Houses is that visitors, while moving towards the living room area, pass through the junction spaces which lead to the bedrooms or the kitchen, whereas in the old houses visitors used to enter the parlour directly after entering the house without obtaining any idea about the rest of the edifice. The concept of privacy changes from "*no-one bothering me*" (Margulis, 1977, p. 7) to "*management of social interactions*" (Altman 1977, p. 68). In cases were the main entrance leads directly into the living room, the spatial organization of the house is similar to that of the old Terraces, in which visitors remain in a 'shallow' space without coming in contact with the private zones. The isovists of the following page demonstrate that the visitors' perception of the house either from the entrance of the building or from its living room has not changed significantly (fig. 13). The only substantial difference to the old dwellings is that in some cases visitors come in visual contact with the kitchen (e.g. Millennium Village) or the dining room (e.g. Grand Union Canal).

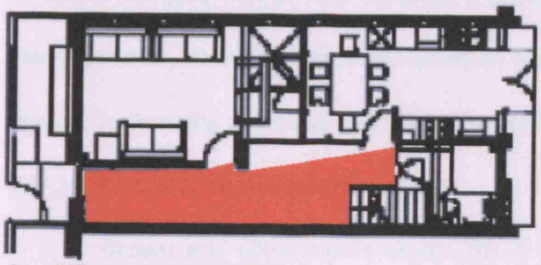
The elimination of the parlour is considered to have brought the domestic space closer to the public realm than it used to be. This hypothesis however should be examined with scepticism in regards to the spatial configuration of the Terraced House. It is truth that the parlour used to function as a barrier between the private and the public domain, since - although it was the front room - it accommodated life only occasionally. In the new dwellings this 'dead space' barrier does not exist but the desire for privacy against the public space is not weakened at all. In a surprisingly great number of case studies the role of the 'defender of privacy' is undertaken by a new space type, which mediates between the house and the city. This is either a fenced front-yard (e.g. Angell Town), a terrace (e.g. Fleet road - type 1) or an open covered space (e.g. Willow Road). The only case where the entrance leads directly to the living room is Alexandra Road Estate but we should remember that in an introvert modernistic housing estate like this, visual contact with passers by is already reduced and therefore the need for an extra barrier should not be really strong.



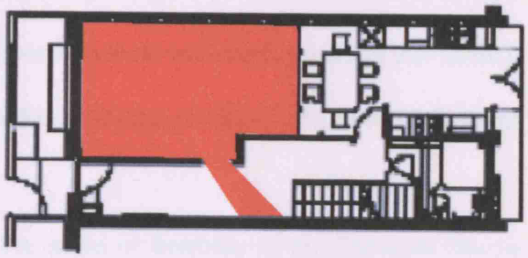
Grand Union Canal (Isovist from Entrance)



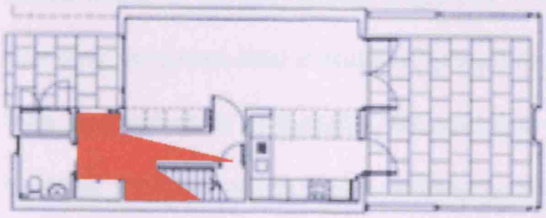
Grand Union Canal (Isovist from living room)



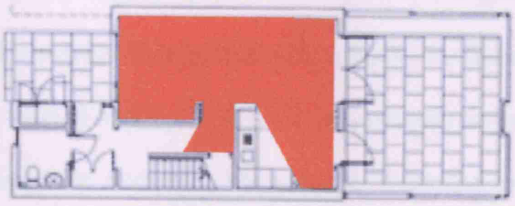
Angell Town (Isovist from Entrance)



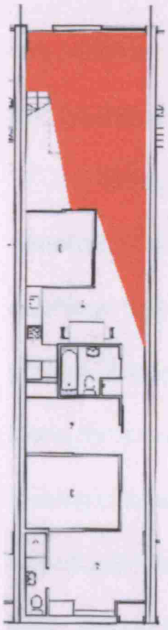
Angell Town (Isovist from living room)



Millenium Village (Isovist from Entrance)

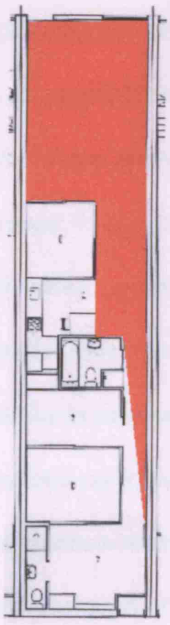


Millenium Village (Isovist from living room)



Slim House 1

(Isovist from Entrance)



Slim House 1

(Isovist from living room)

Figure 13: Isovists

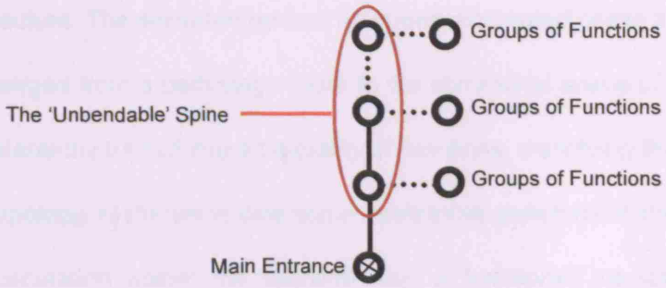
c. Tracing the limits in flexibility of the Terraced House typology

As Hanson's study (1998, pp. 109-133) reveals, the traditional Terraced House has shown a great flexibility towards the evolving English domestic culture. Adapting their spatial configuration in order to accommodate the changing needs of the inhabitants, the old dwellings have successfully managed to survive. But the typology's great ability to change is demonstrated by the fact that new versions of this type of houses kept being built until the present time. Architects often claim that the new schemes they propose are re-interpretations of the old Terraced House or even that they re-invent the typology. This study however has demonstrated that although it has suffered many changes in its spatial structure, the Terraced House has inherited a great number of its original genotypical properties to its new 'descendants'. Therefore the basic question that is raised here has to do with the flexibility of the Terrace House: how many possible morphological variations can this typology produce? Moreover, are there any limitations in its flexibility?

Brown and Steadman's study (1987) examined the issue of flexibility of the Terraced House based solely on its geometrical properties. However in the second chapter of this report it is argued that their outcomes also included a group of meaningless results making this methodology inefficient for a thorough study of flexibility. We would get the same kind of results if we made experiments on the syntactic structure of the house omitting to take its geometrical attributes into account. Exploring the limitations of the versatility of the Terraced House would require an equal estimation of both these factors which on one hand relate to the dimensions of the plot and the rooms' need for light and ventilation and on the other define the kinds of interfaces that take place within the dwelling.

Using the representation of a graph as a base for our analysis we may start looking at the genotypical limits in the morphology of the Terraced House. It is a fact that the narrowness of these dwellings makes them split their functions in two or more storeys, adding this way syntactic depth to the system. This also means that a special space will always be reserved on each floor for the staircases. Moreover it is essential to have at least one space that mediates between the staircases (just a staircase landing or a normal functional room). The rest of the functions can only be attached (either in groups or individually) to this mediating space. The above logical sequence leads us to introduce maybe the only basic morphological limitation of the typology: the spatial structure of the Terraced House cannot but

be built around a central 'spine' of spaces. If we exclude any alternative entrances to the upper floors from the exterior (as they are not meant to be used for the circulation in the house) and we consider the fact that the limitations in the house's size allow only one staircase per floor this spine is syntactically 'unbendable'. This genotypical limit on the Terraced House morphology agrees with all the case studies based on which the previous analysis was made and could be summarized in the following diagram:



Taking this argument further we see that the 'spine' might probably be the most syntactically integrated group of spaces carrying important social information by dividing and uniting the functions of the house. In the pre-WW2 sample we saw that it represented the strong programme of the building whereas in the post-WW2 houses it stands for the management of the levels of privacy.

The rest of the house's spaces are strongly connected to the 'spine', composing spatial trees or rings. It would be unwise to search for limitations in the syntactic or geometric properties of those since as demonstrated before they are usually dependent to the unpredictably evolving cultural factors. However the sample of houses that has been examined for the needs of this study strongly obeys another rule in regards to the arrangement of spaces within the house. Again, due to the narrow and deep shape of the sites, the rooms (whenever the floor is not just one uniform space) follow the front / back classification. This unavoidable categorisation has an impact on the character of spaces (their orientation, their atmosphere, their views) imposing series of factors that may influence the designer.

At this stage any other attempt to trace any limits in the flexibility of a building - even a little one - might sound as an attempt to predict the future. As the occupants of the 17th century Terraces would probably consider the modern dwellings' space at least improper, in the same way we could be surprised if we saw a future Terraced House. Besides, no-one can guarantee that this housing typology would continue to exist in the future. When its spatial potentiality ceases to support the changing users' needs it will probably be abandoned and become just another remnant from the past.

Chapter 6: Conclusion

This report set out to explore the evolution of typology of the London Terraced House, since its initial appearance in the late 17th century until the present day. It is argued that its spatial configuration has suffered many alterations, reflecting the evolution in the English domestic culture and the changing trends in architecture. The secluded parlour has been eliminated giving its place to the new living room, kitchen has changed from a backstage room to the communal space of the house, but most of all, the strong spatial hierarchy turned into an equality of functions, dissolving the strong-programme organization of the old typology. At the same time some basic initial genotypical attributes, like the uniting function of the central circulation 'spine', the 'terminal rings of functions', the visitors' limited perception of the dwelling's interior or the strong privacy against the public realm, have survived until nowadays formulating a set of strong genotypical attributes.

An inquiry on the limitations in the flexibility of this housing typology was also presented. It was argued that the narrow proportions of the building plot unavoidably cause a distribution of functions onto more than one floors, imposing a strong rule in regards to the spatial configuration of the Terraced Houses, which is the organization and the strong dependence of spaces on a syntactically central, 'unbendable spine'. However, as Hanson underlines (1998, p. 77) social rules are not imprinted on space following a 'cause and effect relationship', therefore even if we knew how the English domestic culture will change in the future, we could not securely expand the discussion on the adaptability of the spatial configuration of these dwellings.

The ideas and the arguments presented on this report were drawn on the analysis of 27 built houses and prototypes. Thus, in order for these to be reliably generalized, more case studies should be tested, including schemes of different types (converted dwellings, great Terraces etc.) and deeper ethnographical data on the English domestic culture should be taken into account. This analysis attempted to look into just a part of the big Terraced House family, showing that the genotype of these dwellings, although bound to certain rules, has endowed them with great adaptability to social changes. We only have to wait and see how this typology will keep on evolving, or how a change in the domestic culture that the Terraces will not be able to support, will lead them to their 'expiration'.

Footnotes

1. The RIBA Housing Awards website: *http://www.designforhomes.org/hda/*

2. As summarized by Hanson (1998, p. 130)

3. http://en.wikipedia.org/wiki/Terraced_house

4. Evans (1997) quotes a text from Morris (1985) where the visitors of a house have to go through the "terror" of moving through a bedroom in order to get to the living room.

5. The presentation on the Space Syntax ideas and techniques is based on the "*Space Syntax Glossary*", by Björn Klarqvist and the "*Simple Guide to Space Syntax Analysis*", by Space Syntax Laboratory.

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http://www.designforhomes.org/hda/archive/index.html (The Housing Design Awards)

http://housingprototypes.org

http://www.designforhomes.org

The form of the collective table (p. 23) was inspired by Bendik Manum's presentation in the 5th Space Syntax Symposium (2005) "Generality versus Specificity; A Study on the Interior Space of Apartments"

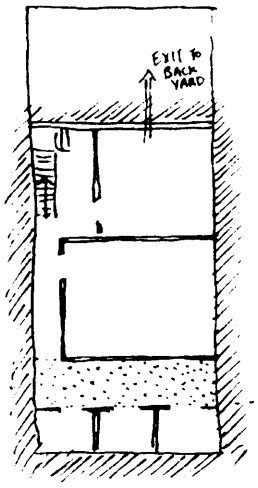
The syntactic analysis of the case studies was done in the Jass computer programme, Bergsten, L. et al (2003)

Case Number

1

: First London Building Act 1667 - Class II

Bibliography: Summerson (1945), The Original Act (1667), Muthesius (1984)



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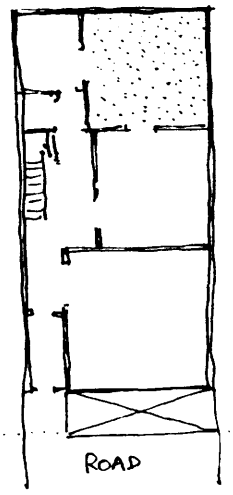

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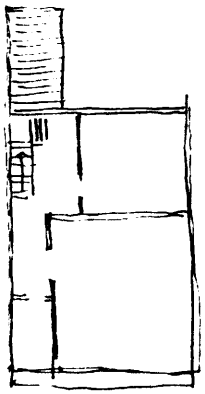

First - Second Floor

Case Number

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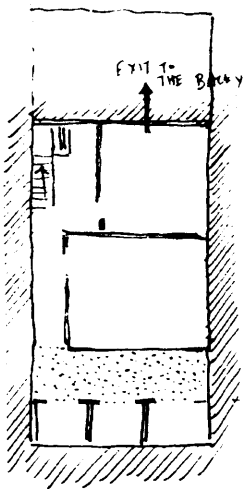
: First London Building Act 1667 - Class III

Bibliography: Summerson (1945), The Original Act (1667), Muthesius (1984)



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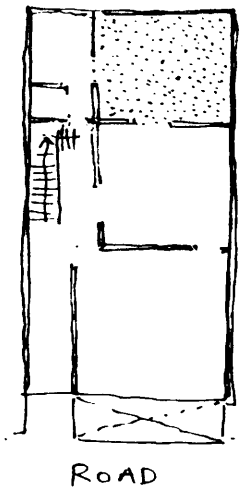

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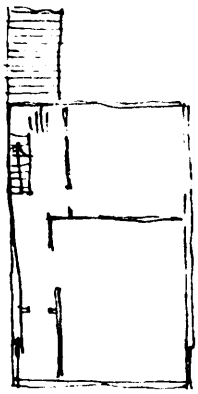

First Floor

Case Number

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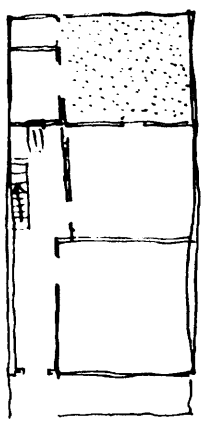
: First London Building Act 1667 - Class IV

Bibliography: Summerson (1945), The Original Act (1667), Muthesius (1984)



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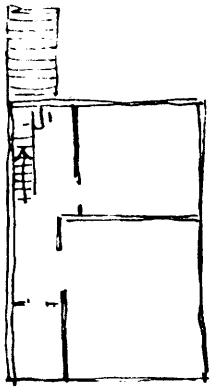


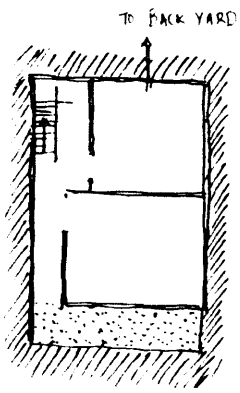
First Floor

Case Number

4

: The Great London Building Act 1774 - Class II

Bibliography: Summerson (1945), Muthesius (1982), Simon (1875), Nicholson (1823), Fletcher (1871; 1901)



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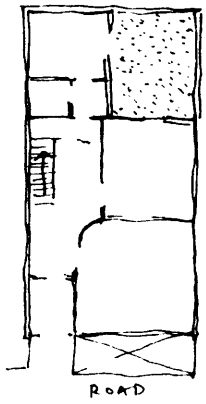

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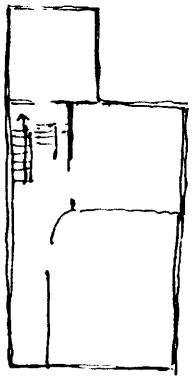

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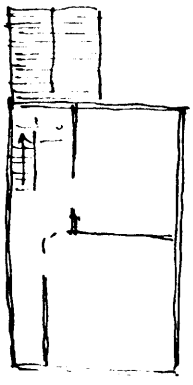


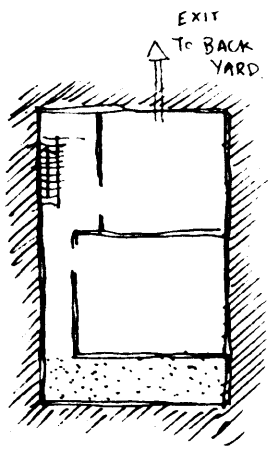
Second Floor

Case Number

5

: The Great London Building Act 1774 - Class III

Bibliography: Summerson (1945), Muthesius (1982), Simon (1875), Nicholson (1823), Fletcher (1871; 1901)



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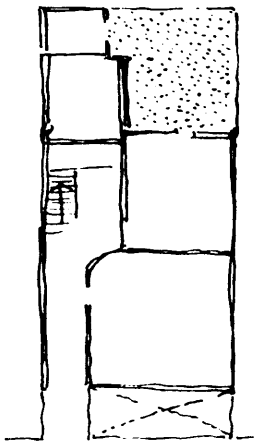

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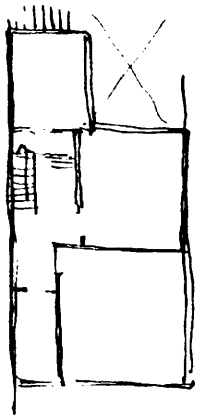

First Floor

Case Number

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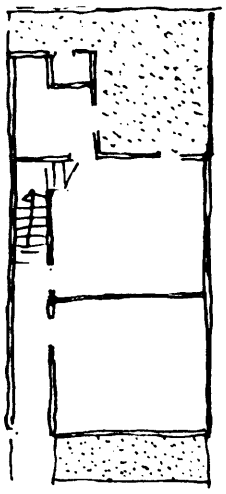
: The Great London Building Act 1774 - Class IV

Bibliography: Summerson (1945), Muthesius (1982), Simon (1875), Nicholson (1823), Fletcher (1871; 1901)



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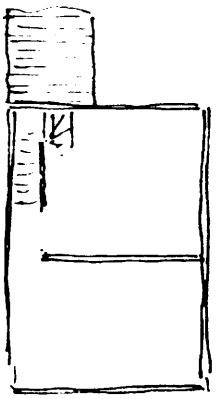


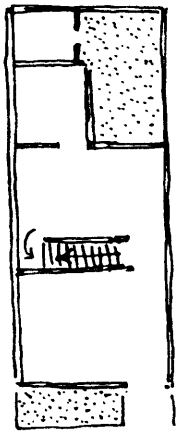
First Floor

Case Number

7

: Central Staircase Type

Bibliography: Muthesius (1982), Hanson (1998)



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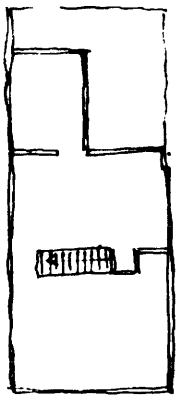


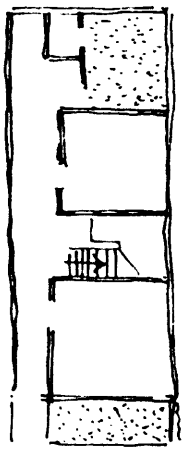
First Floor

Case Number

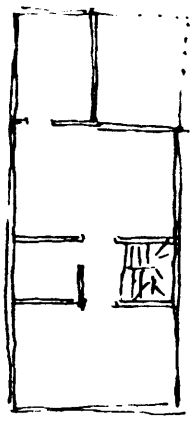
8

: Central Staircase & Hallway leading to Back Projection

Bibliography: Muthesius (1982), Brown & Steadman (1987)



Ground Floor



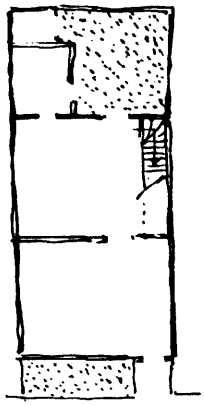
First Floor

Case Number

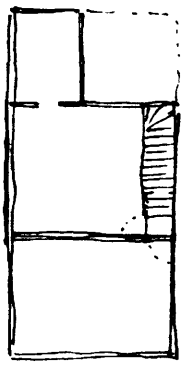
9

: Side Staircase Type

Bibliography: Muthesius (1984), Brown & Steadman (1987)



Ground Floor



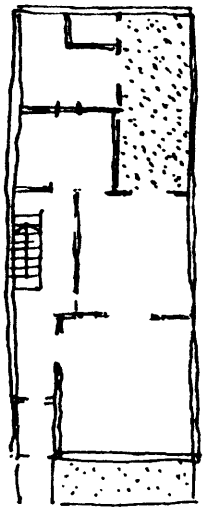
First Floor

Case Number

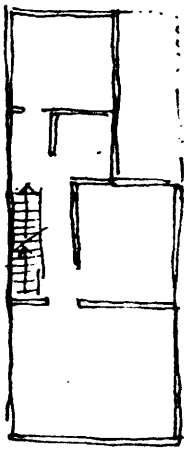
10

: Type with Hallway Leading to Back Projection

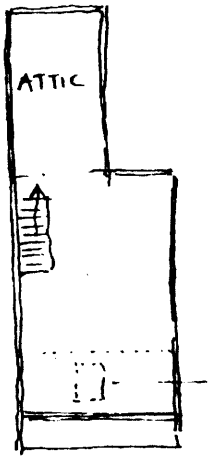
Bibliography: Muthesius (1984), Brown & Steadman (1987)



Ground Floor



First Floor



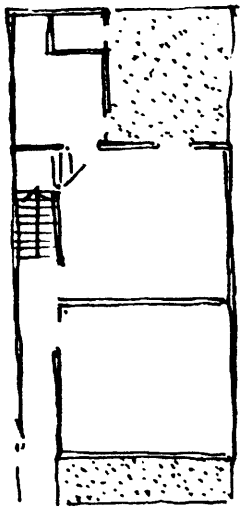
Second Floor

Case Number

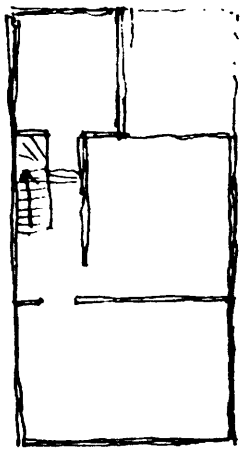
11

: Working Class Terraced House (19th-20th Century)

Bibliography: Summerson (1945), Muthesius (1982), Hanson (1998)



Ground Floor



First Floor

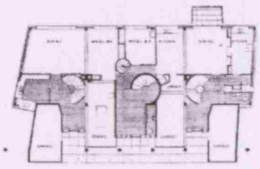
Case Number

12

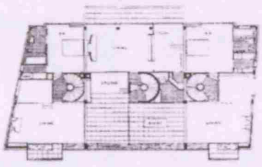
: Willow Road

1940

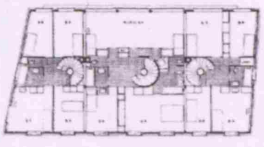
Architect: Enro Gordfinger
Published in: http://housingprototypes.org



Ground Floor



First Floor



Second Floor

Case Number

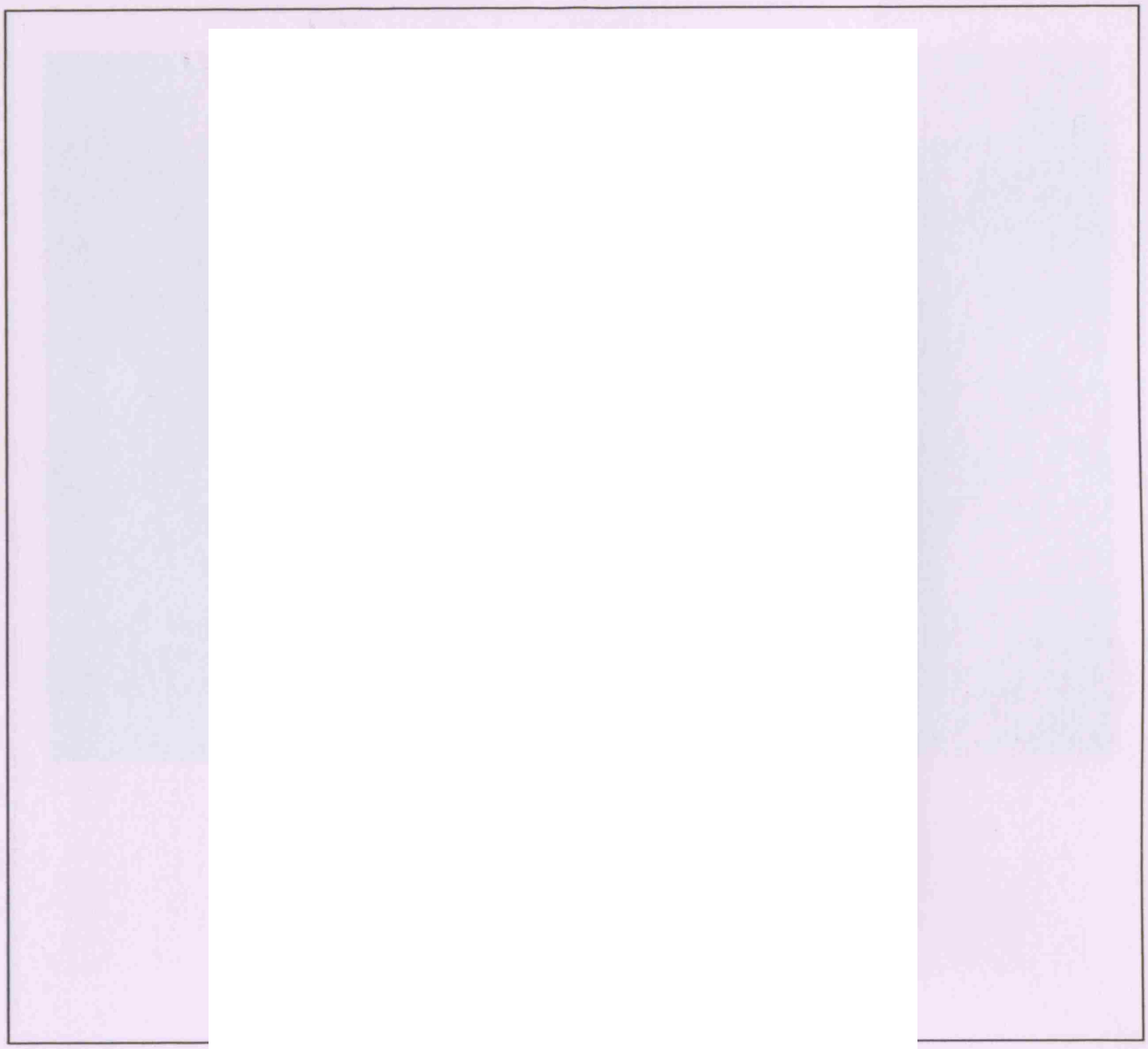
13

: Fleet Road - Type 1

1967

Architect:

Published in: Modern Housing Prototypes (Sherwood, R.)



Case Number

14

: Fleet Road - Type 2

1967

Architect:

Published in: Modern Housing Prototypes (Sherwood, R.)

Case Number

15

: Linden Grove

1971

Architect:

Published in: A Decade of British Housing (Crawford D.)

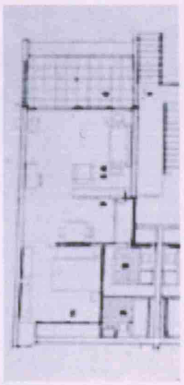
Case Number

16

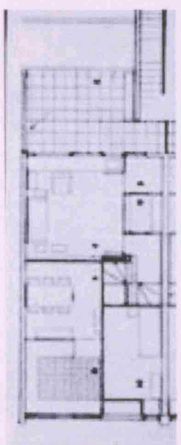
: Alexandra Road

1977

Architect: Neave Brown
Published in: http://housingprototypes.org



Ground Floor



First Floor

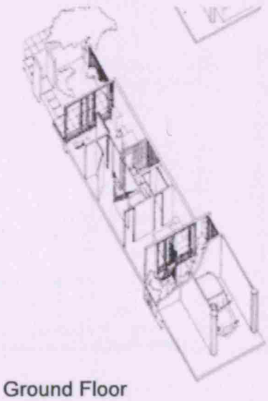
Case Number

17

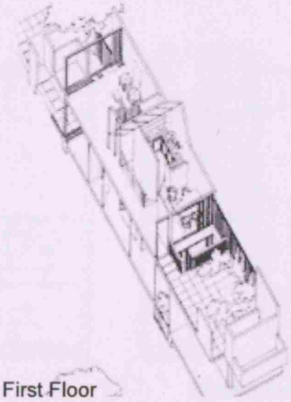
: Maiden Lane

1982

Architect: Benson Gordon & Alan Forsyth
Published in: http://housingprototypes.org



Ground Floor



First Floor

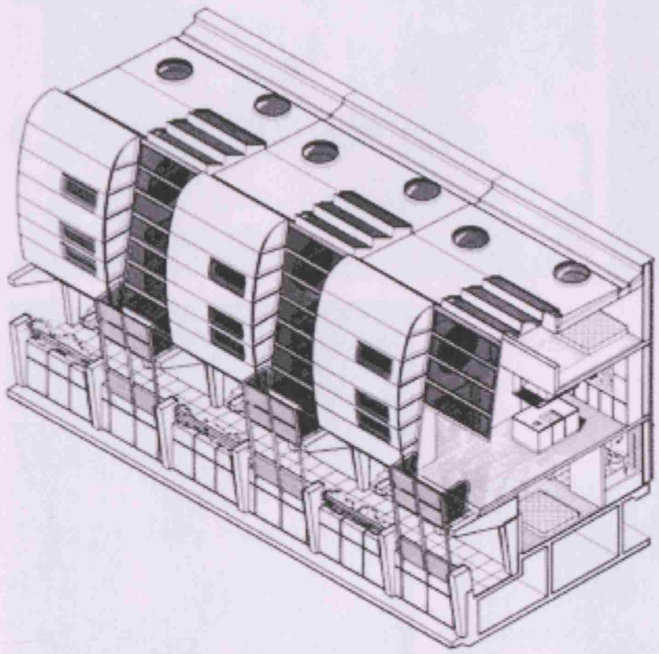
Case Number

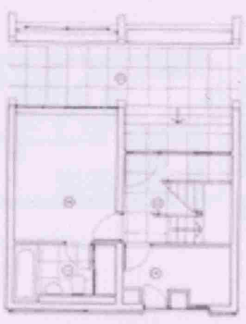
18

: Grand Union Canal

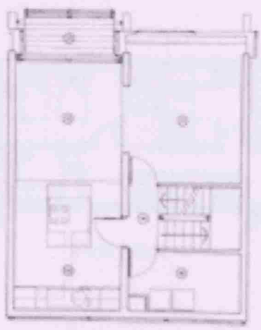
1985

Architect: Nicholas Grimshaw & Partners
Published in: http://housingprototypes.org

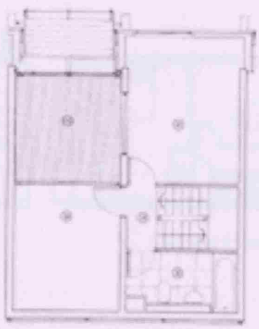




Ground Floor



First Floor



Second Floor

Case Number

19

: Angell Town

1993

Architect:

Published in: The Housing Design Awards 2000

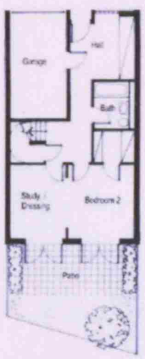
Case Number

20

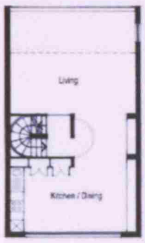
: Lonsdale Place

1995

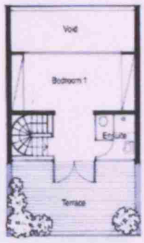
Architect: Tassou Associates
Published in: www.designforhomes.org



Ground Floor



First Floor



Second Floor

Case Number

21

: Slim House 1

1998

Architect:

Published in: D'Avoine (2005)

Case Number

22

: Slim House 2

2000

Architect:

Published in: D' Avoine (2005)

Case Number

23

: Millenium Village

2001

Architect:

Published in: The Housing Design Awards 2000

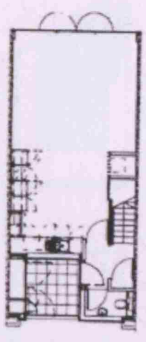
Case Number

24

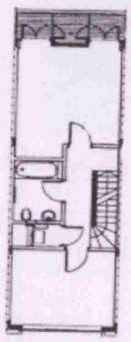
: Coin Street

2001

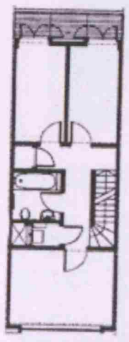
Architect: Haworth Tompkins Architects
Published in: www.designforhomes.org



Ground Floor



First Floor



Second Floor

Case Number

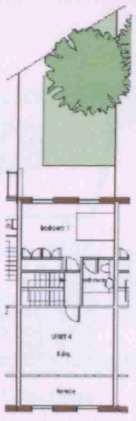
25

: Straightsmouth

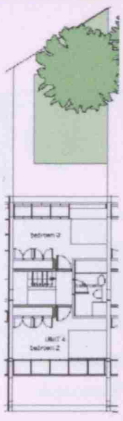
2003

Architect: The Boisot Waters Cohen Partnership
Published in: www.designforhomes.org

Ground Floor



First Floor



Second Floor

Case Number

26

: Crown Place Mews

2003

Architect:

Published in: The Housing Design Awards 2003

Case Number

27

: Donnybrook Quarter

2004

Architect:

Published in: The Housing Design Awards 2004